55-1520-238-23-5

TM 55-1520-238-23-5

DESCRIPTION AND OPERATION - INSTRUMENTS

MAINTENANCE - ENGINE INSTRUMENTS

MAINTENANCE - FLIGHT INSTRUMENTS

MAINTENANCE - NAVIGATION INSTRUMENTS

MAINTENANCE - MISCELLANEOUS INSTRUMENTS

DESCRIPTION AND OPERATION - ELECTRICAL SYSTEM

MAINTENANCE - POWER AND DISTRIBUTION

MAINTENANCE - LIGHTING PROVISIONS

MAINTENANCE - CAUTIONS AND WARNINGS

MAINTENANCE - MISCELLANEOUS ELECTRICAL

TECHNICAL MANUAL

AVIATION UNIT AND INTERMEDIATE MAINTENANCE MANUAL

FOR

ARMY AH-64A HELICOPTER

CHAPTER 8
INSTRUMENTS

CHAPTER 9
ELECTRICAL SYSTEM

"Approved for public release; distribution is unlimited."

This manual together with TM 55-1520-238-23-1, 7 June 1988, TM 55-1520-238-23-2, 7 June 1988, TM 55-1520-238-23-3, 7 June 1988, TM 55-1520-238-23-4, 7 June 1988, TM 55-1520-238-23-6, 7 June 1988, TM 55-1520-238-23-7, 7 June 1988, TM 55-1520-238-23-8, 7 June 1988, TM 55-1520-238-23-9, 7 June 1988, TM 55-1520-238-23-10, 7 June 1988, supersedes TM 55-1520-238-23-1, 4 March 1985, TM 55-1520-238-23-2, 4 March 1985, TM 55-1520-238-23-3, 4 March 1985, TM 55-1520-238-23-4, 4 March 1985, TM 55-1520-238-23-5, 4 March 1985, TM 55-1520-238-23-6, 4 March 1985, TM 55-1520-238-23-7, 4 March 1985, TM 55-1520-238-23-8, 4 March 1985.

HEADQUARTERS, DEPARTMENT OF THE ARMY

7 JUNE 1988

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CHAPTER 8

INSTRUMENTS

CHAPTER OVERVIEW

This chapter contains description, operation information, and maintenance instructions for the instruments.

Instruments troubleshooting information is in TM 55-1520-238-T.

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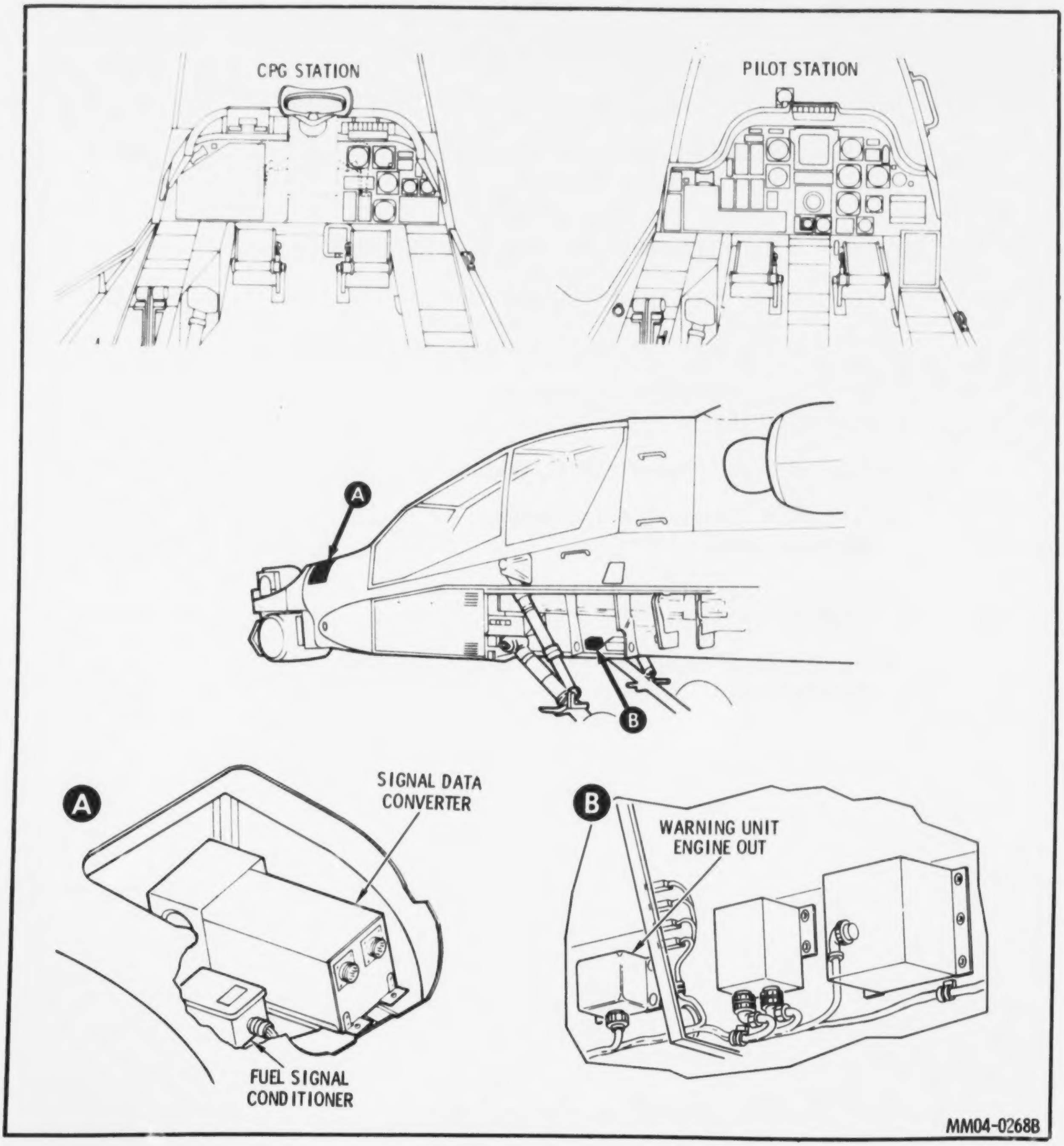
Section I. INSTRUMENTS DESCRIPTION AND OPERATION

8-1-1. INSTRUMENTS DESCRIPTION AND OPERATION 8-1-1


CPG STATION
PILOT STATION
A
B
A
SIGNAL DATA CONVERTER
FUEL SIGNAL CONDITIONER
B
WARNING UNIT ENGINE OUT
MM04-0268B

8-1-1. INSTRUMENTS DESCRIPTION AND OPERATION (cont) 8-1-1

A. The instrument system provides the pilot and copilot/gunner (CPG) with engine and flight information.

B. The instruments are on instrument panels in the pilot and CPG stations.

C. A signal data converter (SDC) and a fuel signal conditioner (FSC) are in the helicopter nose, access L40.

D. The instruments are the following main types:

Engine

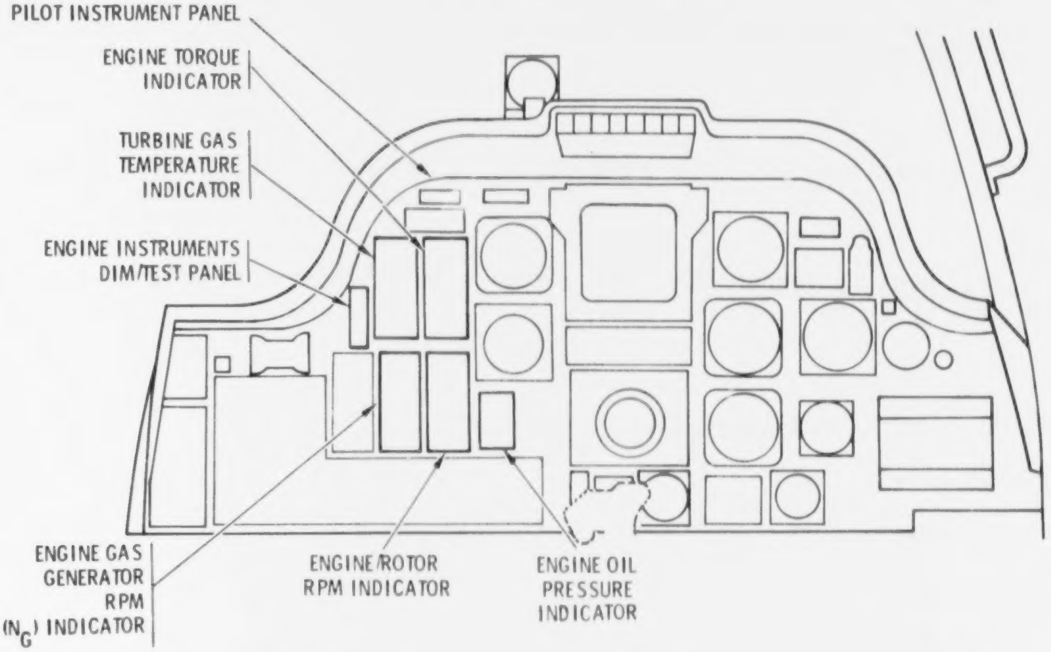
Flight

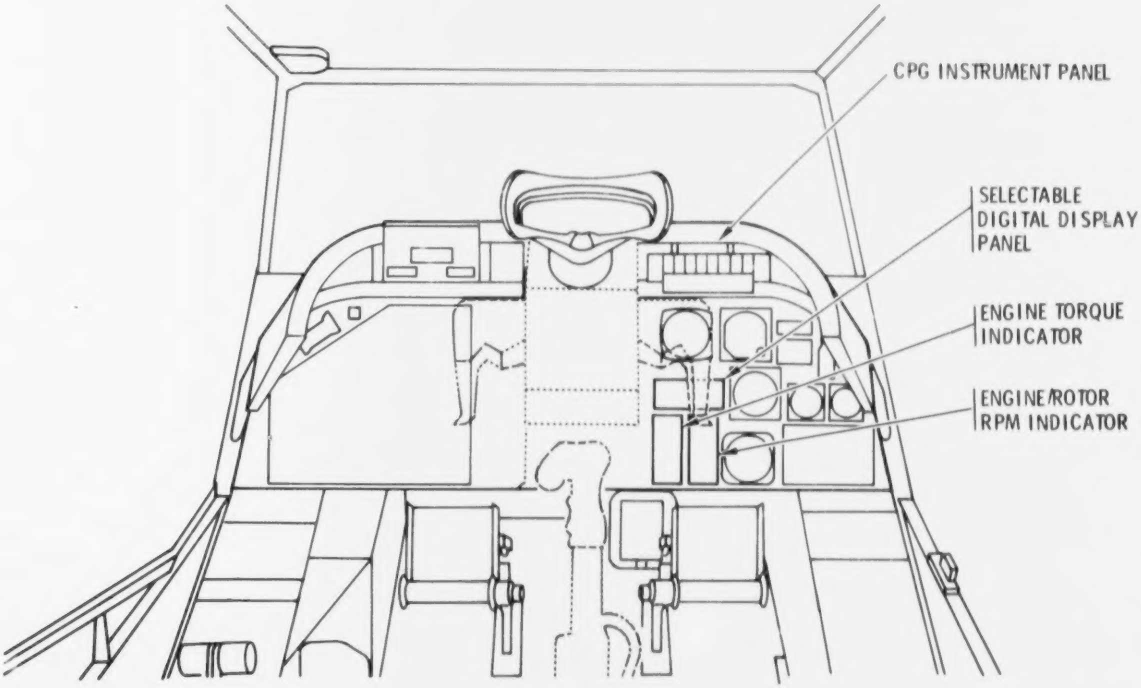
Flight Reference

Navigation

Miscellaneous

8-1-2. ENGINE INSTRUMENT INDICATORS DESCRIPTION AND OPERATION 8-1-2


PILOT INSTRUMENT PANEL
ENGINE TORQUE INDICATOR
TURBINE GAS TEMPERATURE INDICATOR
ENGINE INSTRUMENTS DIM/TEST PANEL
ENGINE GAS GENERATOR RPM (N_G) INDICATOR
ENGINE/ROTOR RPM INDICATOR
ENGINE OIL PRESSURE INDICATOR


CPG INSTRUMENT PANEL
SELECTABLE DIGITAL DISPLAY PANEL
ENGINE TORQUE INDICATOR
ENGINE/ROTOR RPM INDICATOR

MM04-0269-1B

8-1-2. ENGINE INSTRUMENT INDICATORS DESCRIPTION AND OPERATION (cont) 8-1-2

A. The instrument indicators measure and display engine and rotor performance.

B. Engine instrument indicators on the pilot instrument panel are:

Turbine gas temperature

Engine torque

Engine oil pressure

Engine/Rotor RPM

Engine gas generator RPM (N_G)

C. Engine instrument indicators on the copilot/gunner (CPG) instrument panel are:

Engine/Rotor RPM

Engine torque

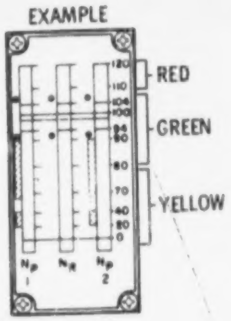
Selectable digital display (SDD) panel

D. All engine instrument indicator lights are controlled by:

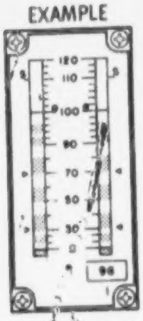
DIM/TEST panel on the pilot instrument panel

SDD panel on the CPG instrument panel

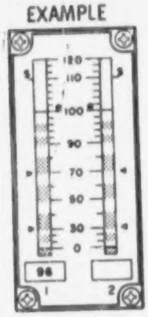
8-1-2. ENGINE INSTRUMENT INDICATORS DESCRIPTION AND OPERATION (cont) 8-1-2


EXAMPLE
120
110
104
100
94
90
80
70
40
20
0
RED
GREEN
YELLOW
NP 1
NR
NP 2

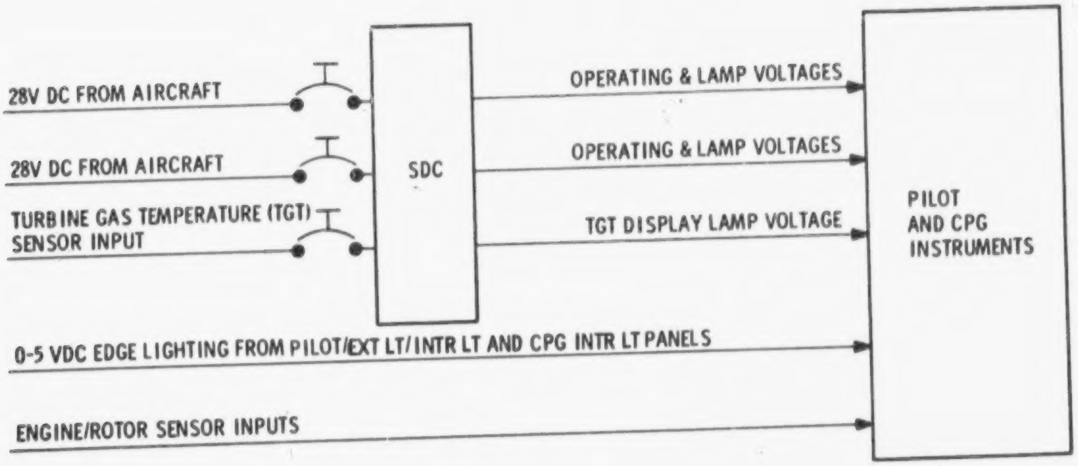
COLOR-CODED, NUMBERED VERTICAL SCALES


EXAMPLE
120
110
100
90
70
50
30
0
96
1

NO. 1 POWER/LAMP SUPPLY FAILURE


EXAMPLE
120
110
100
90
70
50
30
0
96
1
2

NO. 2 POWER/LAMP SUPPLY FAILURE


28V DC FROM AIRCRAFT
28V DC FROM AIRCRAFT
TURBINE GAS TEMPERATURE (TGT) SENSOR INPUT
SDC
OPERATING & LAMP VOLTAGES
OPERATING & LAMP VOLTAGES
TGT DISPLAY LAMP VOLTAGE
PILOT AND CPG INSTRUMENTS
0-5 VDC EDGE LIGHTING FROM PILOT/EXT LT/INTR LT AND CPG INTR LT PANELS
ENGINE/ROTOR SENSOR INPUTS

MM04-269-2

8-1-2. ENGINE INSTRUMENT INDICATORS DESCRIPTION AND OPERATION (cont) 8-1-2

E. The engine indicator displays are of three kinds:

Vertical scale displays

Three-digit digital readouts

Six-digit digital readouts

F. The vertical scales have fixed, numbered scales. The scales are divided into green, yellow, and red zones to indicate degree of performance. Green - Normal; Yellow - Caution; Red - Danger. The size of each colored zone varies with each type of instrument.

G. The digital readouts show values in numbers. The digital readout values are more exact than the vertical scale values.

H. The engine indicators operate in the following modes:

NORMAL - The vertical scales display columns of light in only one zone at a time. The columns of light move up or down as engine/rotor performance changes. The digital readouts change numbers as performance changes.

DIGITAL BLANKING - The digital readouts are blanked out. The vertical scale displays operate normally.

TEST - The vertical scales display full-scale columns of light. The digital readouts display three eights (888).

I. All indicators operate during failure of a power supply or a lamp supply. The displays change if power fails:

Every other vertical scale light segment goes out.

Digital readouts receiving power from the failed unit go out.

J. All indicators are edge-lighted.

K. All indicators are protected by circuit breakers.

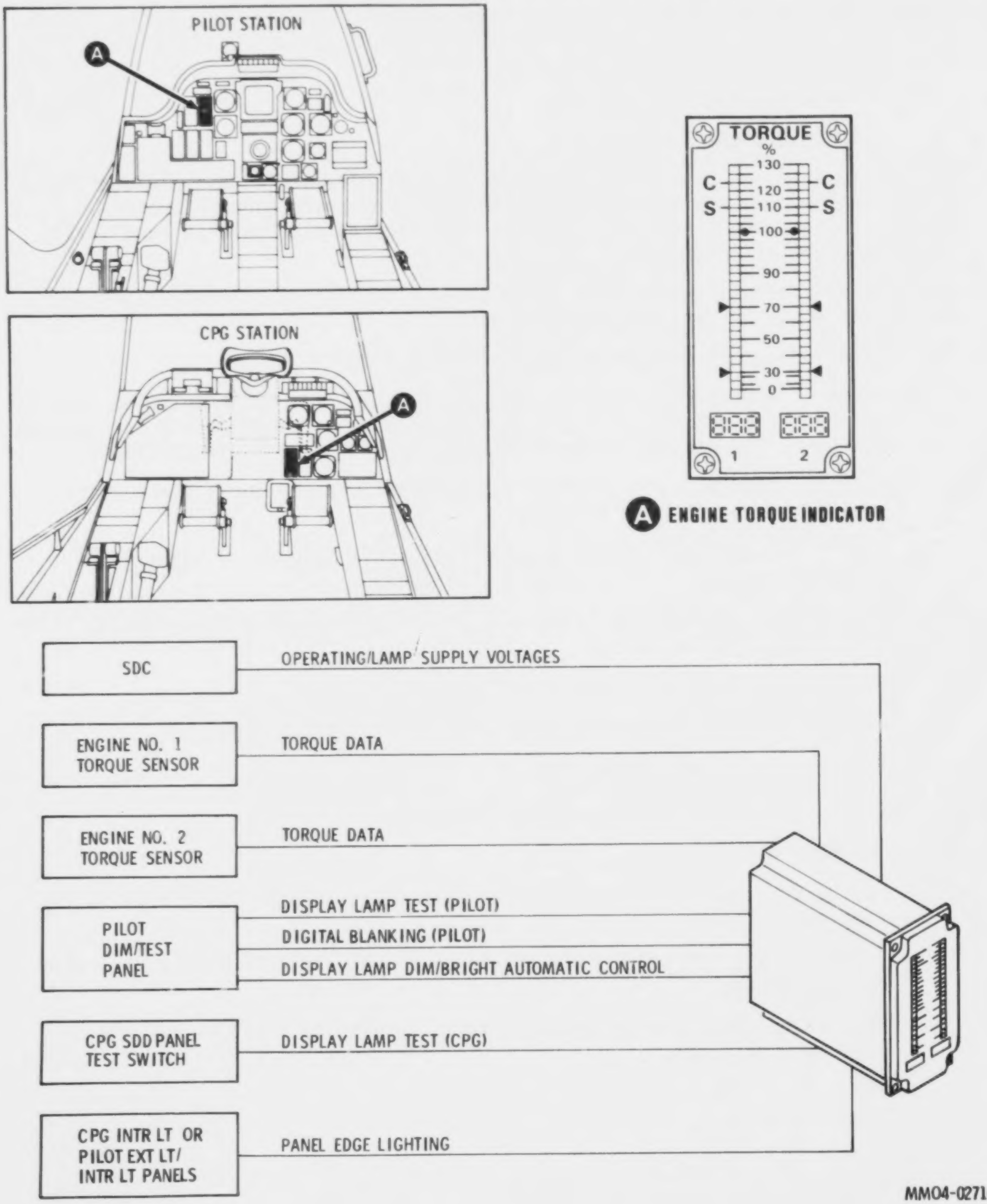
L. All indicators operate from:

Two 28 VDC inputs for the aircraft power buses changed to operating and lamp supply power.

Zero to 5 VDC for pilot **EXT LT/INTR** LT and CPG **INTR** LT panels indicator edge lighting.

Engine and rotor sensor inputs changed to display voltages for the indicator displays.

8-1-3. ENGINE TORQUE INDICATORS DESCRIPTION AND OPERATION (cont) 8-1-3


PILOT STATION
A
CPG STATION
A
TORQUE
%
130
120
110
100
90
70
50
30
0
C
S
C
S
1
2
A ENGINE TORQUE INDICATOR
SDC
OPERATING/LAMP SUPPLY VOLTAGES
ENGINE NO. 1 TORQUE SENSOR
TORQUE DATA
ENGINE NO. 2 TORQUE SENSOR
TORQUE DATA
PILOT DIM/TEST PANEL
DISPLAY LAMP TEST (PILOT)
DIGITAL BLANKING (PILOT)
DISPLAY LAMP DIM/BRIGHT AUTOMATIC CONTROL
CPG SDD PANEL TEST SWITCH
DISPLAY LAMP TEST (CPG)
CPG INTR LT OR PILOT EXT LT/ INTR LT PANELS
PANEL EDGE LIGHTING

MM04-0271C

8-1-3. ENGINE TORQUE INDICATORS DESCRIPTION AND OPERATION (cont) 8-1-3

A. The engine torque indicators are on pilot and copilot/gunner (CPG) instrument panels.

B. Each indicator has an electronic box mounted behind a front display panel.

C. The front display panel has two vertical scale displays; each mounted above a digital readout. The left side displays engine No. 1 torque values. The right side displays engine No. 2 torque values.

D. The engine torque indicators receive the following inputs:

Operating and display lamp power from the signal data converter (SDC)

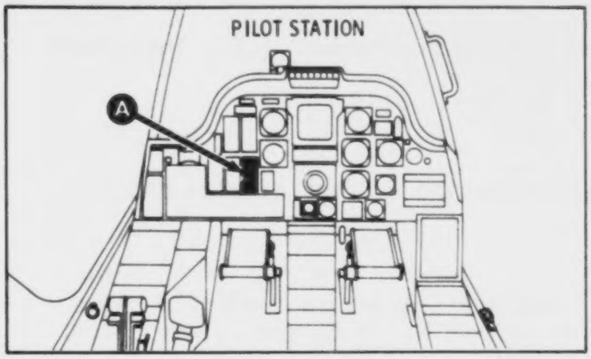
Engine torque data from the two engine torque sensors

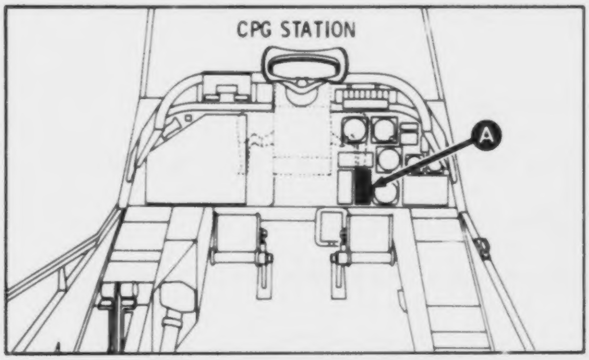
Lamp dimming/lamp test/digital blanking power from the pilot DIM/TEST panel

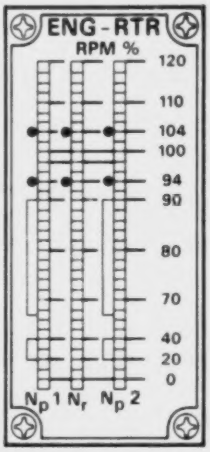
Lamp test power from the copilot/gunner (CPG) selectable digital display (SDD) panel

Edge-lighting power from the pilot **EXT LT/INTR LT** and CPG **INTR LT** panels

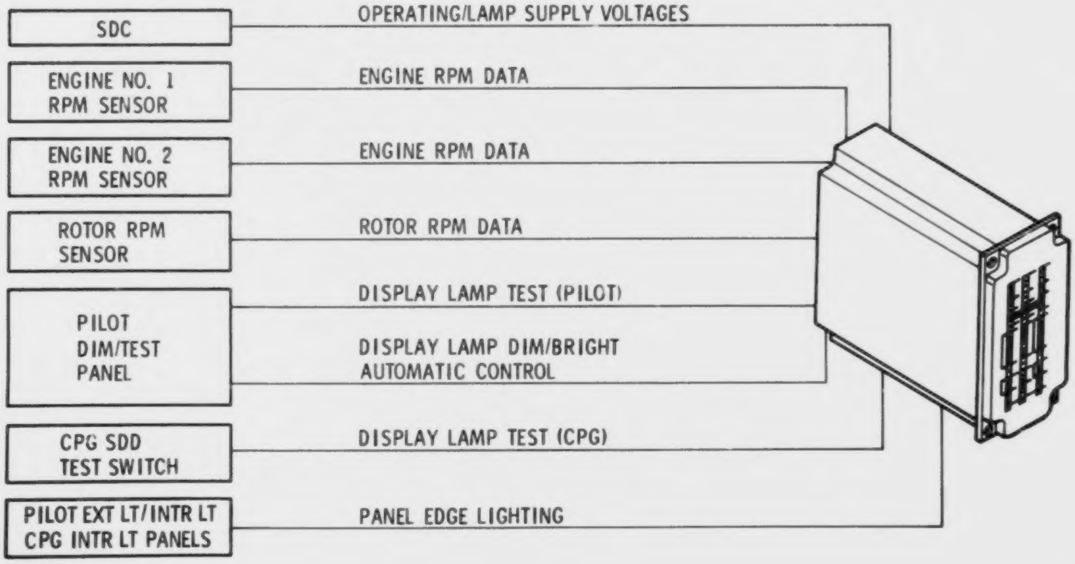
8-1-4. ENGINE/ROTOR RPM INDICATORS DESCRIPTION AND OPERATION 8-1-4


PILOT STATION
A


CPG STATION
A


ENG - RTR
RPM %
120
110
104
100
94
90
80
70
40
20
0
N_p1
N_r
N_p2

Ⓐ ENGINE/ROTOR RPM INDICATOR


SDC
OPERATING/LAMP SUPPLY VOLTAGES
ENGINE NO. 1 RPM SENSOR
ENGINE RPM DATA
ENGINE NO. 2 RPM SENSOR
ENGINE RPM DATA
ROTOR RPM SENSOR
ROTOR RPM DATA
PILOT DIM/TEST PANEL
DISPLAY LAMP TEST (PILOT)
DISPLAY LAMP DIM/BRIGHT AUTOMATIC CONTROL
CPG SDD TEST SWITCH
DISPLAY LAMP TEST (CPG)
PILOT EXT LT/INTR LT CPG INTR LT PANELS
PANEL EDGE LIGHTING

MM04-0272B

8-1-4. ENGINE/ROTOR RPM INDICATORS DESCRIPTION AND OPERATION (cont) 8-1-4

A. The engine rotor RPM indicators are on pilot and copilot/gunner (CPG) instrument panels.

B. Each indicator has an electronic box mounted behind a front display panel.

C. Each indicator front display panel has three vertical scale displays. The left side scale is marked Np1, and displays engine No. 1 RPM. The middle scale is marked N_R, and displays rotor RPM. The right side scale is marked Np2, and displays engine No. 2 RPM.

D. The indicator receives the following inputs:

Operating and display lamp power from the signal data converter (SDC)

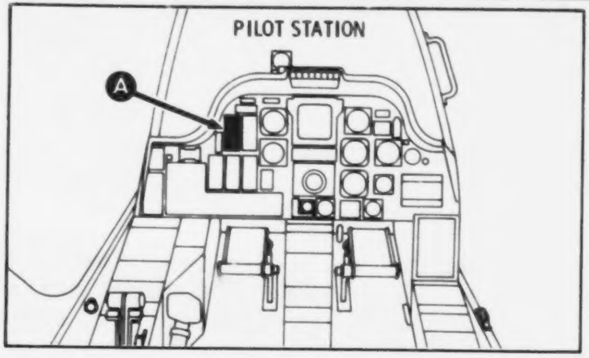
Engine/rotor RPM data from the engine and rotor RPM sensors

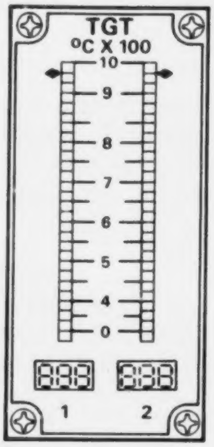
Lamp dimming/lamp test signals from the pilot DIM/TEST panel

Lamp test power from the CPG selectable digital display (SDD) panel

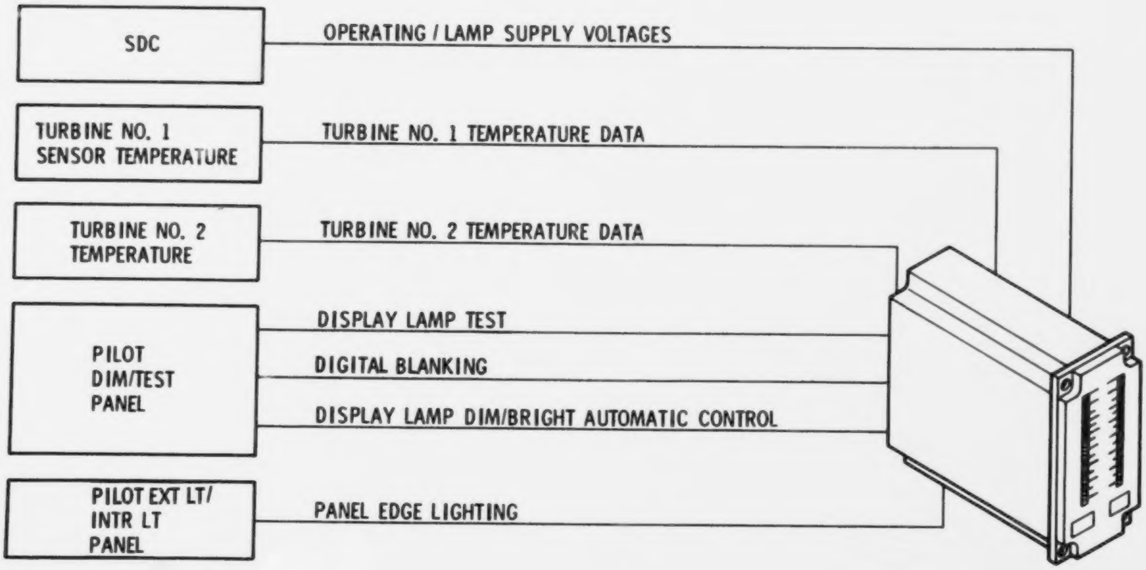
Edge-lighting power from the pilot **EXT LT/INTR LT** and CPG **INTR LT** panels

8-1-5. TURBINE GAS TEMPERATURE (TGT) INDICATORS DESCRIPTION AND OPERATION 8-1-5


PILOT STATION
A


TGT
°C X 100
10
9
8
7
6
5
4
0
1
2

A TGT INDICATOR


SDC
OPERATING / LAMP SUPPLY VOLTAGES
TURBINE NO. 1 SENSOR TEMPERATURE
TURBINE NO. 1 TEMPERATURE DATA
TURBINE NO. 2 TEMPERATURE
TURBINE NO. 2 TEMPERATURE DATA
PILOT DIM/TEST PANEL
DISPLAY LAMP TEST
DIGITAL BLANKING
DISPLAY LAMP DIM/BRIGHT AUTOMATIC CONTROL
PILOT EXT LT/ INTR LT PANEL
PANEL EDGE LIGHTING

MM04-0273C

8-1-5. TURBINE GAS TEMPERATURE (TGT) INDICATORS DESCRIPTION AND OPERATION (cont)

A. The TGT indicator is on the engine instrument panel.

B. The indicator has an electronic box mounted behind a front display panel.

C. The front display panel has two vertical scale displays; each mounted above a digital readout. The left side displays turbine No. 1 values; the right side displays turbine No. 2 values.

D. The TGT indicator receives the following inputs:

Operating and display lamp power from the signal data converter (SDC)

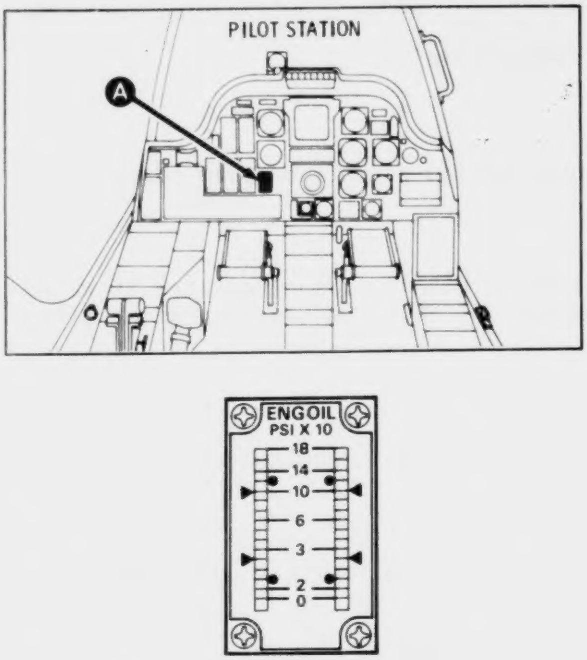
TGT data from the turbine sensor

Lamp dimming/lamp test/digital blanking signals from the pilot DIM/TEST panel

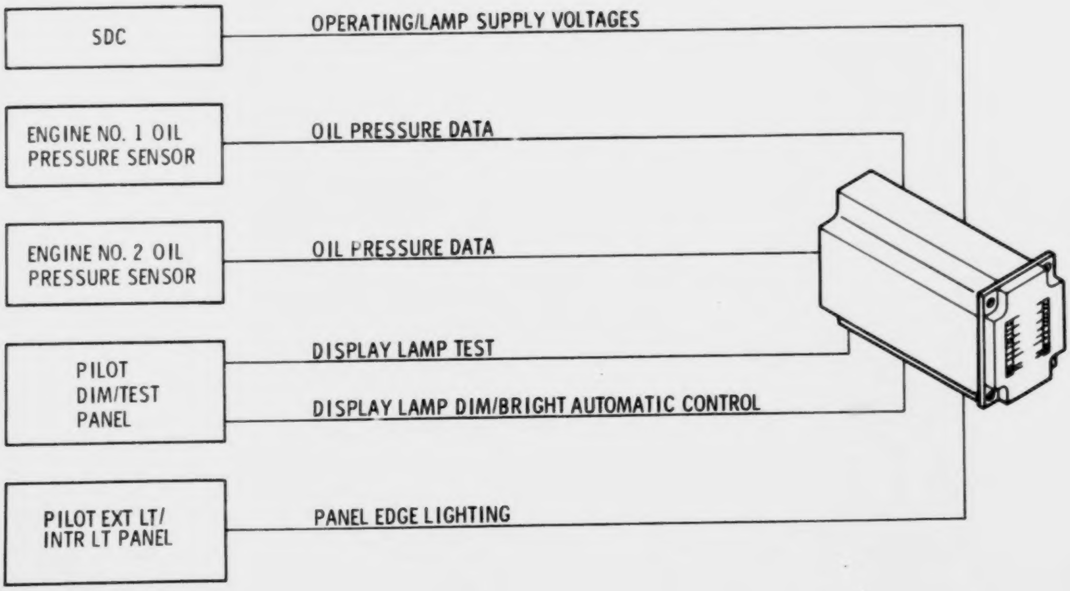
Edge-lighting power from the pilot **EXT LT/INTR LT** panel

E. The TGT indicator is controlled by the pilot DIM/TEST panel DGT OFF/NORM TST switch.

8-1-6. ENGINE OIL PRESSURE INDICATOR DESCRIPTION AND OPERATION 8-1-6


PILOT STATION
A
ENGOIL
PSI X 10
18
14
10
6
3
2
0

Ⓐ **ENGINE OIL PRESSURE INDICATOR**


SDC
OPERATING/LAMP SUPPLY VOLTAGES
ENGINE NO. 1 OIL PRESSURE SENSOR
OIL PRESSURE DATA
ENGINE NO. 2 OIL PRESSURE SENSOR
OIL PRESSURE DATA
PILOT DIM/TEST PANEL
DISPLAY LAMP TEST
DISPLAY LAMP DIM/BRIGHT AUTOMATIC CONTROL
PILOT EXT LT/ INTR LT PANEL
PANEL EDGE LIGHTING

MM04-0274B

8-1-6. ENGINE OIL PRESSURE INDICATOR DESCRIPTION AND OPERATION (cont) 8-1-6

A. The engine oil pressure indicator is on the pilot instrument panel.

B. The indicator has an electronic box mounted behind a front display panel.

C. The front display panel has two vertical scale displays side by side. The left side displays engine No. 1 values; the right side displays engine No. 2 values.

D. The indicator receives the following inputs:

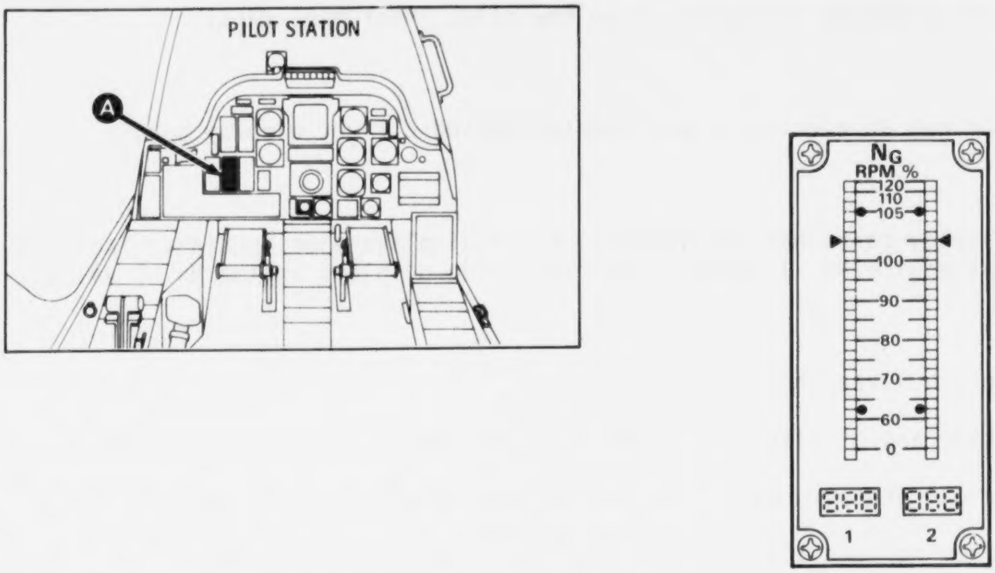
Operating and display lamp power from the signal data converter (SDC)

Engine oil pressure data from the two engine oil pressure sensors

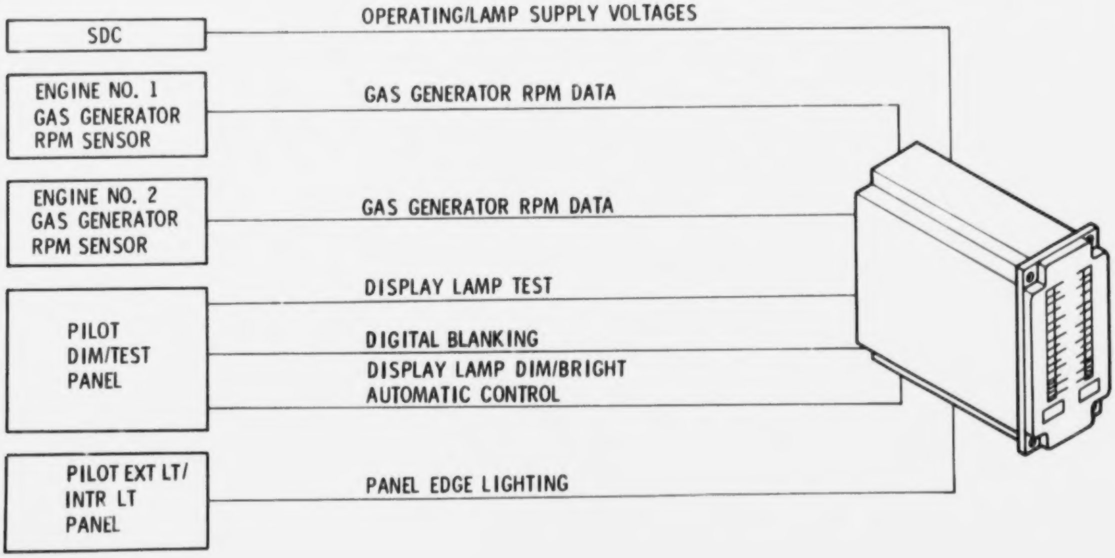
Lamp dimming/lamp test signals from the pilot DIM/TEST panel

Edge-lighting power from the pilot EXT LT/INTR LT panel

8-1-7. ENGINE GAS GENERATOR RPM INDICATOR DESCRIPTION AND OPERATION 8-1-7


PILOT STATION
A
N_G
RPM %
120
110
105
100
90
80
70
60
0
1
2

Ⓐ **ENGINE GAS GENERATOR RPMINDICATOR**


SDC
OPERATING/LAMP SUPPLY VOLTAGES
ENGINE NO. 1 GAS GENERATOR RPM SENSOR
GAS GENERATOR RPM DATA
ENGINE NO. 2 GAS GENERATOR RPM SENSOR
GAS GENERATOR RPM DATA
PILOT DIM/TEST PANEL
DISPLAY LAMP TEST
DIGITAL BLANKING
DISPLAY LAMP DIM/BRIGHT AUTOMATIC CONTROL
PILOT EXT LT/ INTR LT PANEL
PANEL EDGE LIGHTING

MM04-0276C

8-1-7. ENGINE GAS GENERATOR RPM INDICATOR DESCRIPTION AND OPERATION (cont) 8-1-7

A. The engine gas generator N_G RPM% indicator is on the pilot instrument panel.

B. The indicator has an electronic box mounted behind a front display panel.

C. The front display panel has two vertical scale 0 to 120% displays; each mounted above a digital readout. The left side displays gas generator RPM for engine No. 1. The right side displays gas generator RPM for engine No. 2.

D. The indicator receives the following inputs:

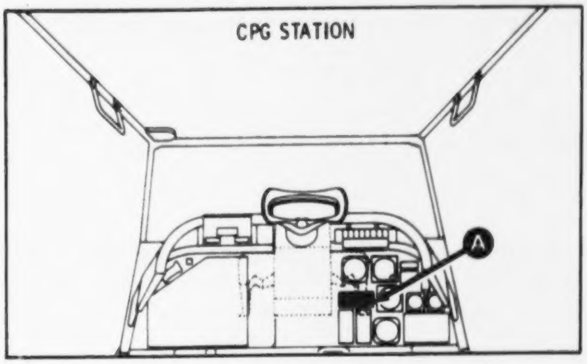
Operating and display lamp power from the signal data converter (SDC)

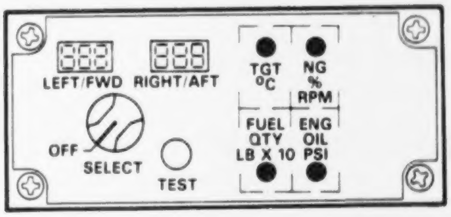
Engine gas generator RPM data from the two engine gas generator RPM sensors

Lamp dimming/lamp test/digital blanking signals from the pilot DIM/TEST panel

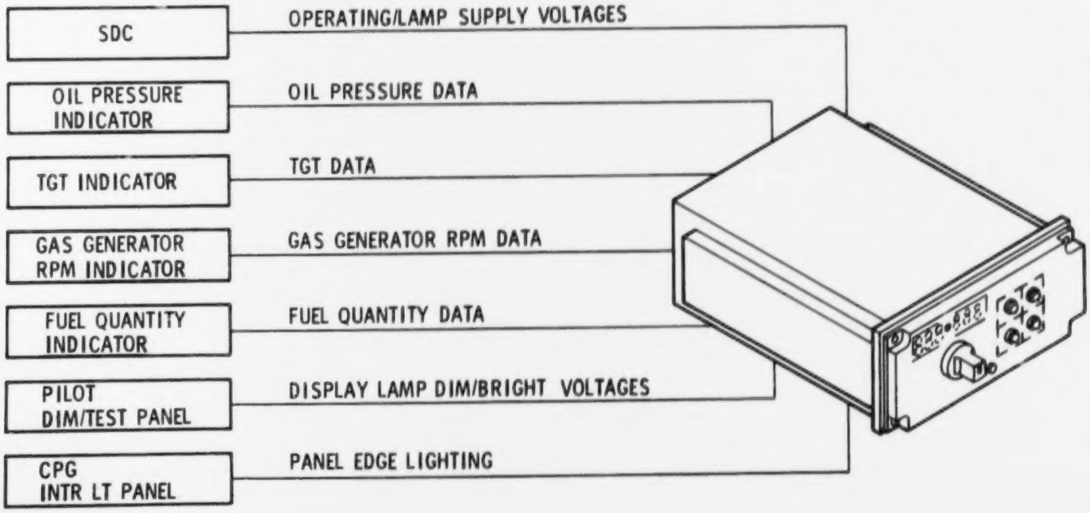
Edge-lighting power from the pilot **EXT LT/INTR LT** panel

8-1-8. SELECTABLE DIGITAL DISPLAY (SDD) PANEL DESCRIPITON AND OPERATION 8-1-8


CPG STATION
A


LEFT/FWD
RIGHT/AFT
TGT
°C
NG
%
RPM
FUEL
QTY
LB X 10
ENG
OIL
PSI
OFF
SELECT
TEST

Ⓐ SDD PANEL


SDC
OPERATING/LAMP SUPPLY VOLTAGES
OIL PRESSURE INDICATOR
OIL PRESSURE DATA
TGT INDICATOR
TGT DATA
GAS GENERATOR RPM INDICATOR
GAS GENERATOR RPM DATA
FUEL QUANTITY INDICATOR
FUEL QUANTITY DATA
PILOT DIM/TEST PANEL
DISPLAY LAMP DIM/BRIGHT VOLTAGES
CPG INTR LT PANEL
PANEL EDGE LIGHTING

MM04-0277B

8-1-8. SELECTABLE DIGITAL DISPLAY (SDD) PANEL DESCRIPITON AND OPERATION (cont)

A. The SDD panel is on the engine copilot/gunner (CPG) instrument panel.

B. The SDD panel has the following control switches, digital readouts, and lamps:

SELECT control switch
TEST control switch
LEFT/FWD digital readout
RIGHT/AFT digital readout

TGT °C lamp
N_G % RPM lamp
FUEL QTY LB X 10 lamp
ENG OIL PSI lamp

C. The SELECT switch selects pilot engine instrument data for display on the SDD digital readouts. The lamp on the SDD panel for the data selected lights at the same time.

D. The SDD panel receives the following inputs:

Linear analog DC signals from the pilot engine instruments: oil pressure, TGT, gas generator RPM, and fuel quantity

Operating lamp supply voltages from the signal data converter (SDC)

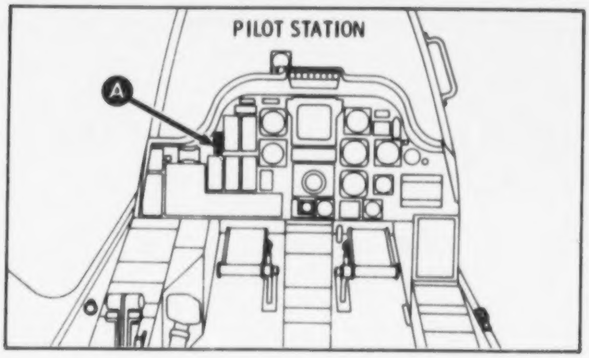
Edge-lighting voltage from the CPG INTR LT panel

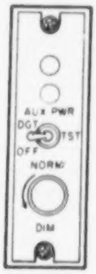
Display lamp dim/bright voltages from the pilot DIM/TEST panel

E. The SDD panel provides digital readouts of engine instrument signals.

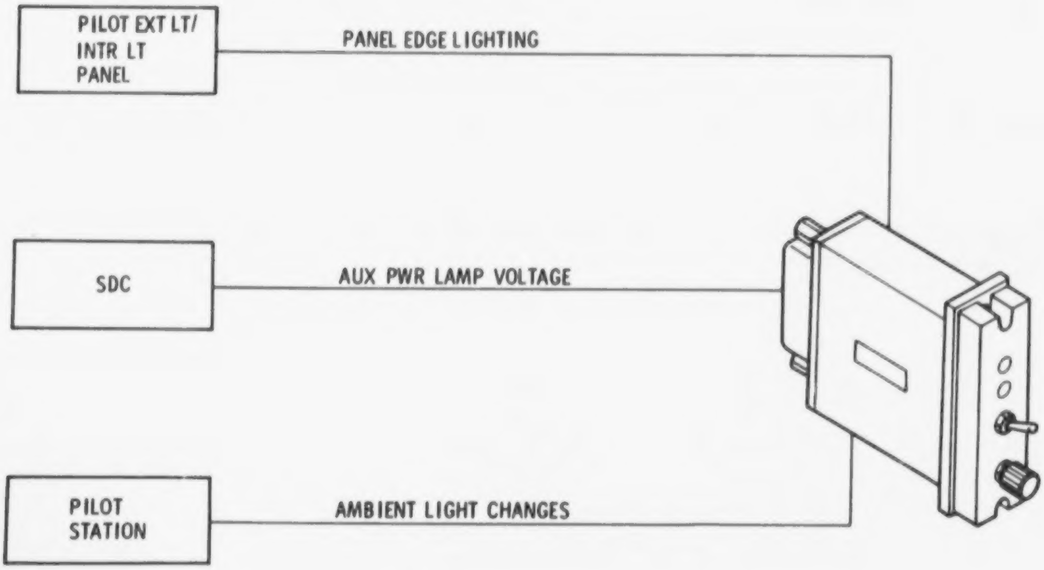
F. The SDD panel TEST switch tests the SDD and CPG engine torque instrument displays and readouts.

8-1-9. ENGINE INSTRUMENT INDICATOR DIM/TEST CONTROL PANEL DESCRIPTION AND OPERATION 8-1-9


PILOT STATION
A


AUX PWR
DGT
TST
OFF
NORM/
DIM

A ENGINE INSTRUMENT DIM/TEST CONTROL PANEL


PILOT EXT LT/ INTR LT PANEL
PANEL EDGE LIGHTING
SDC
AUX PWR LAMP VOLTAGE
PILOT STATION
AMBIENT LIGHT CHANGES

MM04-0278B

8-1-9. ENGINE INSTRUMENT INDICATOR DIM/TEST CONTROL PANEL DESCRIPTION AND OPERATION

A. The DIM/TEST control panel is on the pilot instrument panel.

B. The DIM/TEST control panel has the following controls and warning lamp:

DGT OFF/NORM/TST control switch

DIM control switch

AUX PWR warning lamp

Photocell

C. The control panel receives edge-lighting power from the pilot EXT LT/INTR LT panel INST switch.

D. The DGT OFF/NORM/TST switch controls the following functions:

Blanking out of the digital readout digits on the pilot engine instruments

Testing of the pilot engine instrument displays and DIM/TEST panel AUX PWR warning lamp

No signals are produced when the switch is at NORM. This allows the engine instruments to operate normally.

E. The DIM control allows the pilot to set or change instrument display brightness.

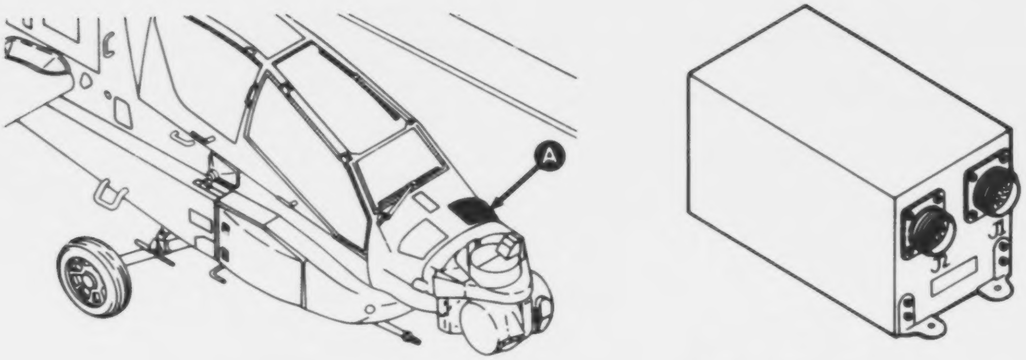
F. The photocell causes instrument display brightness to change as much as pilot station lighting changes.

G. The AUX PWR lamp lights if:

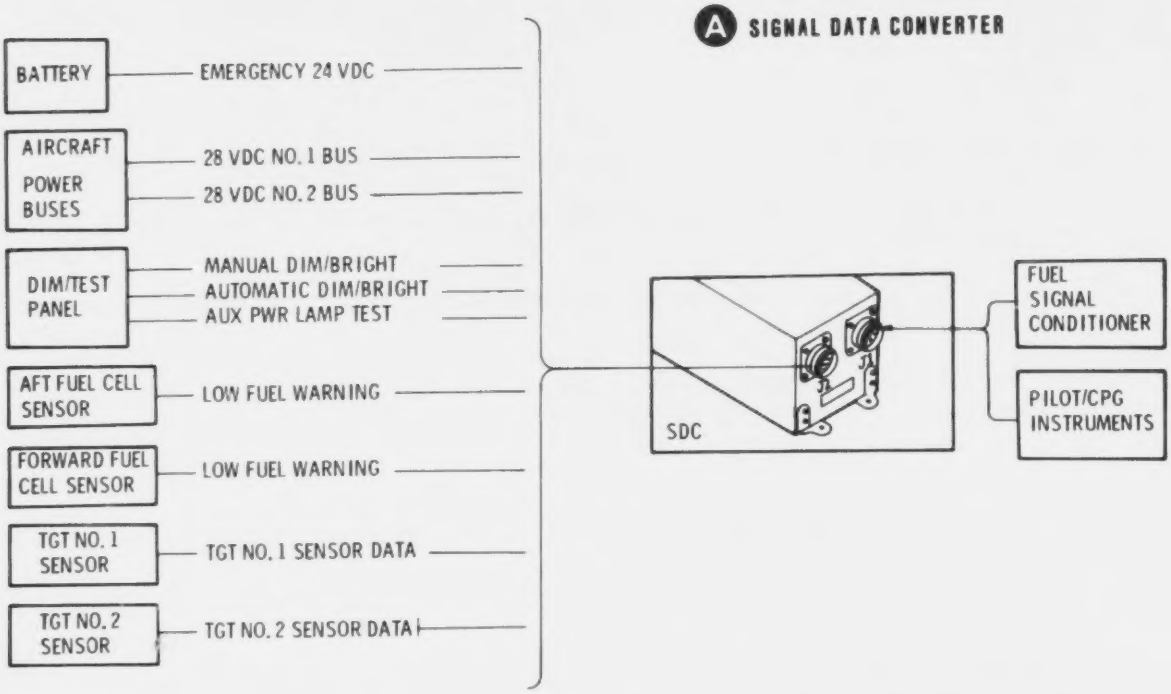
A signal data converter (SDC) power or lamp supply fails

The TST switch position is used

8-1-10. SIGNAL DATA CONVERTER (SDC) DESCRIPTION AND OPERATION 8-1-10



Ⓐ SIGNAL DATA CONVERTER


BATTERY
EMERGENCY 24 VDC
AIRCRAFT POWER BUSES
28 VDC NO. 1 BUS
28 VDC NO. 2 BUS
DIM/TEST PANEL
MANUAL DIM/BRIGHT
AUTOMATIC DIM/BRIGHT
AUX PWR LAMP TEST
AFT FUEL CELL SENSOR
LOW FUEL WARNING
FORWARD FUEL CELL SENSOR
LOW FUEL WARNING
TGT NO. 1 SENSOR
TGT NO. 1 SENSOR DATA
TGT NO. 2 SENSOR
TGT NO. 2 SENSOR DATA
SDC
J1
J2
FUEL SIGNAL CONDITIONER
PILOT/CPG INSTRUMENTS

MM04-0279A

8-1-10. SIGNAL DATA CONVERTER (SDC) DESCRIPTION AND OPERATION (cont) 8-1-10

A. The SDC is in the nose of the helicopter at access station L40.

B. The SDC receives 28 VDC from the helicopter power bus. It reduces this voltage for operation of the instrument system. Power is routed through an internal fuse panel to two internal power supplies. The power supplies lower the 28 VDC to signal processing voltages. Operating power is also routed to the fuel signal conditioner (FSC) and engine torque indicators. The fuse panel protects all instruments from overload.

C. The signal voltages operate pilot/copilot-gunner (CPG) instruments and two lamp supplies. The two lamp supplies light instrument display lamps and send signals to an internal auto dim/voltmonitor.

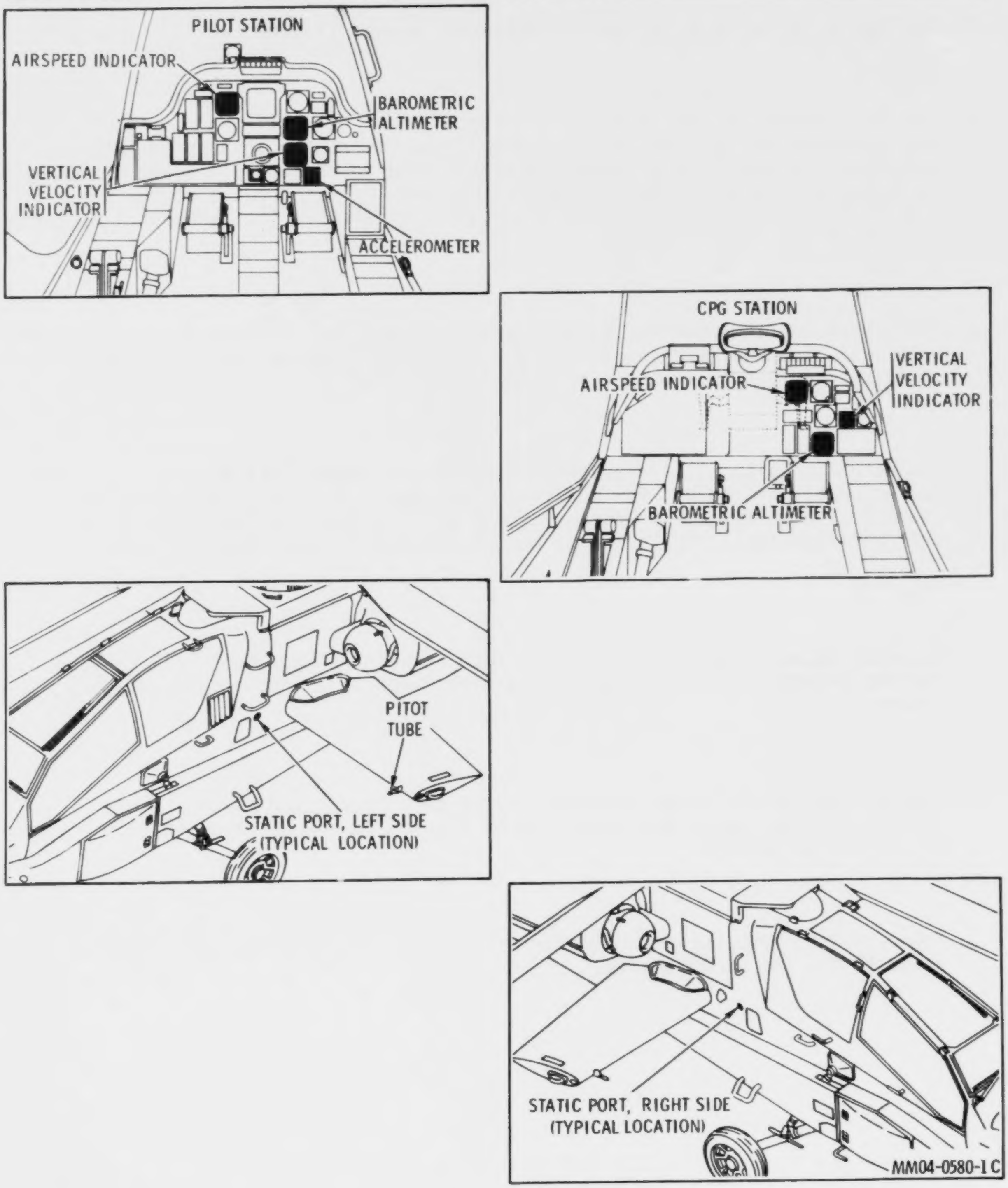
D. The auto dim/voltmonitor provides automatic and manual lamp dimming. It also has external test points for monitoring voltage. The auto dim/voltmonitor sends a warning signal if voltage drops, or if a power or lamp supply fails. This warning signal lights the pilot/CPG instrument panel AUX PWR lamp.

E. Low-fuel signals are sent to the SDC from forward and aft fuel cell sensors. The SDC transmits these signals to warning lamps on the pilot/CPG advisory panels.

F. Engine temperature inputs are sent to the turbine gas temperature (TGT) sensors. These inputs are converted to signals by the SDC and sent to pilot/CPG indicators.

G. Power is shut down during helicopter refueling. A 24 VDC battery supplies power to the FSC at this time,

8-1-11. FLIGHT INSTRUMENTS DESCRIPTION AND OPERATION 8-1-11


PILOT STATION
AIRSPEED INDICATOR
BAROMETRIC ALTIMETER
VERTICAL VELOCITY INDICATOR
ACCELEROMETER
CPG STATION
AIRSPEED INDICATOR
VERTICAL VELOCITY INDICATOR
BAROMETRIC ALTIMETER
PITOT TUBE
STATIC PORT, LEFT SIDE (TYPICAL LOCATION)
STATIC PORT, RIGHT SIDE (TYPICAL LOCATION)
MM04-0580-1 C

8-1-11. FLIGHT INSTRUMENTS DESCRIPTION AND OPERATION (cont) 8-1-11

A. The flight instruments measure and display helicopter performance. The types of performance are airspeed (forward, up, and down), altitude, and gravity (g) forces.

B. The following flight indicators are on pilot and copilot/gunner (CPG) instrument panels:

Pilot	CPG
Airspeed	Airspeed
Vertical velocity	Vertical velocity
Barometric altimeter	Barometric altimeter
Accelerometer	

C. The flight indicators are edge-lighted.

D. Static air inlet ports are on the left and right sides of the helicopter.

E. A direct impact air inlet pitot tube is on the leading edge of the left and right wing.

F. The indicators receive the following inputs:

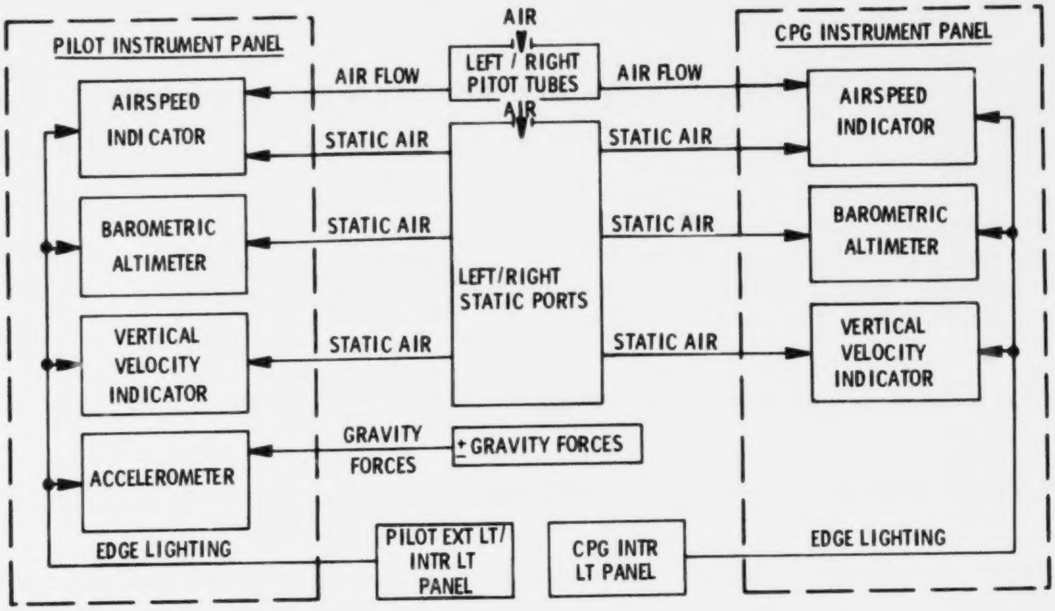
0-5 VAC edge-lighting from the pilot's **EXT LT/INTR LT** panel and CPG **INTR LT** panel.

Direct impact high pressure outside air through a pitot tube on each wing

Static outside air pressure through two static ports on the sides of the fuselage.

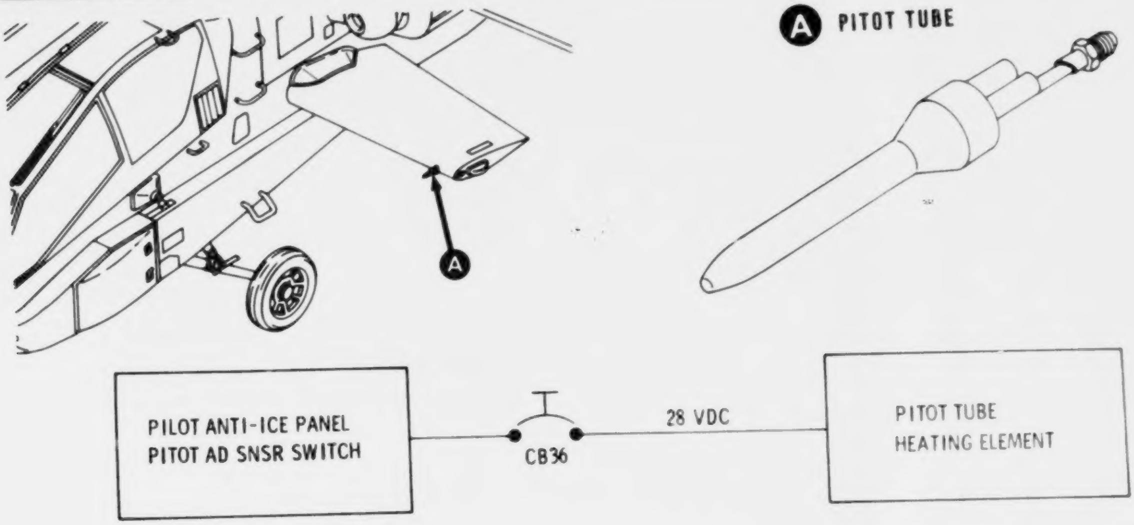
G. The flight instruments operate from direct impact air forces and static outside air pressure. Air is applied to the flight instruments through air inlets and airtight tubing. The air inlets are two pitot tubes and two static ports. The airtight tubing has drains to let any moisture escape.

H. Heating elements in the pitot tubes prevent ice buildup from blocking the air flow.


AIR
PILOT INSTRUMENT PANEL
CPG INSTRUMENT PANEL
LEFT / RIGHT PITOT TUBES
AIR
AIR FLOW
AIR FLOW
AIRSPEED INDICATOR
AIRSPEED INDICATOR
STATIC AIR
STATIC AIR
BAROMETRIC ALTIMETER
BAROMETRIC ALTIMETER
STATIC AIR
STATIC AIR
LEFT/RIGHT STATIC PORTS
VERTICAL VELOCITY INDICATOR
VERTICAL VELOCITY INDICATOR
STATIC AIR
STATIC AIR
GRAVITY FORCES
± GRAVITY FORCES
ACCELEROMETER
EDGE LIGHTING
PILOT EXT LT/ INTR LT PANEL
CPG INTR LT PANEL
EDGE LIGHTING

MM04-0580-2B

8-1-12. PITOT TUBES DESCRIPTION AND OPERATION


A
A PITOT TUBE
PILOT ANTI-ICE PANEL
PITOT AD SNSR SWITCH
CB36
28 VDC
PITOT TUBE
HEATING ELEMENT

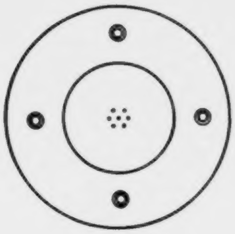
MM04-0581B

A. A pitot tube is on the leading edge of both wings of the helicopter.

B. The pitot tube extends into the airstream in the direction of helicopter forward motion. The opposite end is connected to airtight tubing that connects to both airspeed instruments.

C. The pitot tube has a heating element that keeps it clear of moisture and ice. The heating element can operate from normal helicopter power or emergency battery power. The heating element is controlled by the pilot ANTI-ICE panel PITOT AD SNSR switch.

8-1-13. STATIC PORTS DESCRIPTION AND OPERATION 8-1-13



STATIC PORT

MM04-0582A

A. Static ports are at various points on the helicopter. They provide for selection of suitable sources of static air.

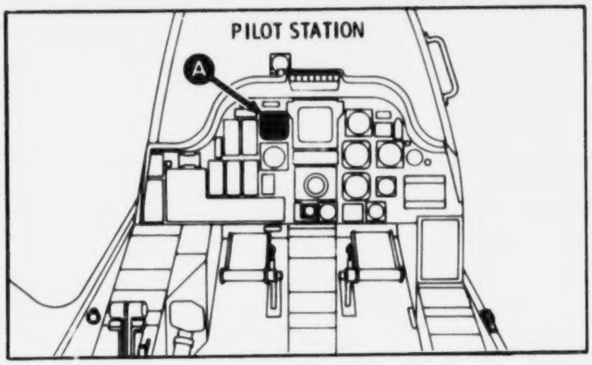
B. The static ports are round plates with drilled holes.

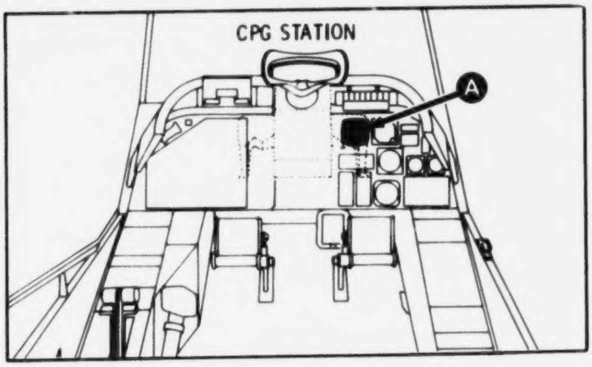
C. Airtight tubing connects the static ports to the flight instruments in both crew stations.

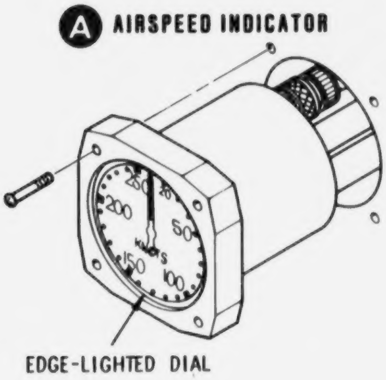
D. The holes allow outside air to pass through the airtight tubing to the flight instruments.

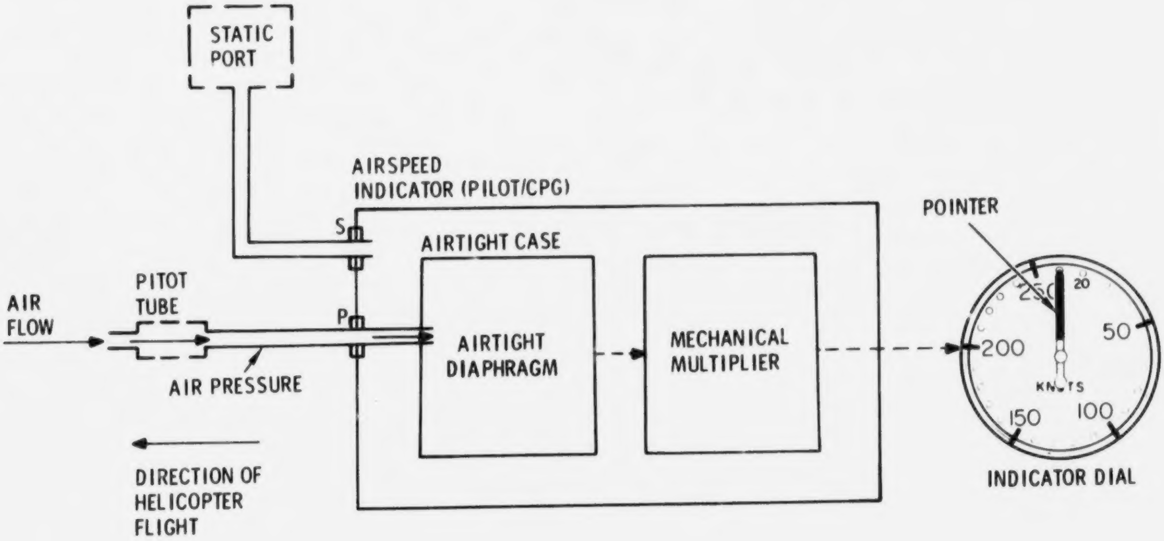
E. Repair of static ports is described in TM 55-1500-204-25/1.

8-1-14. AIRSPEED INDICATORS DESCRIPTION AND OPERATION 8-1-14


PILOT STATION
A


CPG STATION
A


A AIRSPEED INDICATOR
250
20
200
50
KNOTS
150
100
EDGE-LIGHTED DIAL


STATIC PORT
AIRSPEED INDICATOR (PILOT/CPG)
S
P
AIRTIGHT CASE
AIR FLOW
PITOT TUBE
AIR PRESSURE
AIRTIGHT DIAPHRAGM
MECHANICAL MULTIPLIER
POINTER
250
20
200
50
KNOTS
150
100
INDICATOR DIAL
DIRECTION OF HELICOPTER FLIGHT

MM04-0583A

8-1-14. AIRSPEED INDICATORS DESCRIPTION AND OPERATION (cont) 8-1-14

A. The airspeed indicators are on pilot and copilot/gunner (CPG) instrument panels.

B. The airspeed indicators show helicopter airspeed in knots.

C. The calibrated airspeed dial reads from 20 to 250 knots.

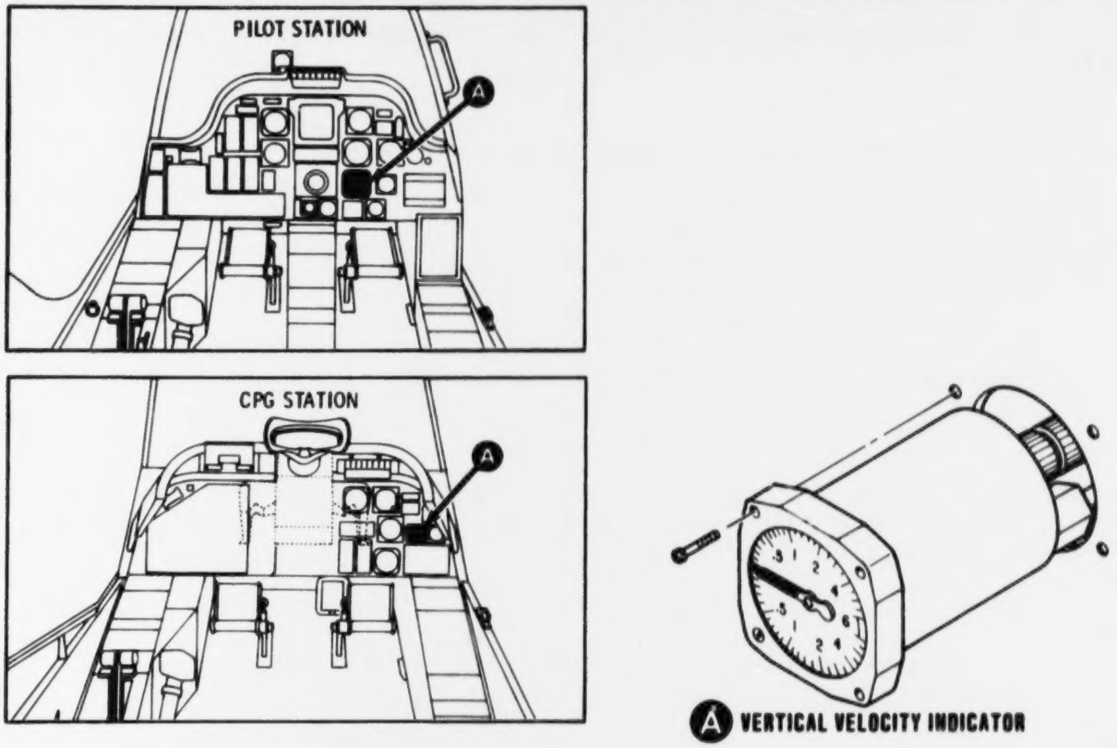
D. The indicators are edge-lighted.

E. A diaphragm is inside the case. The case is connected to the static port which supplies the outside air pressure. The diaphragm connects to the pitot tube which receives ram air.

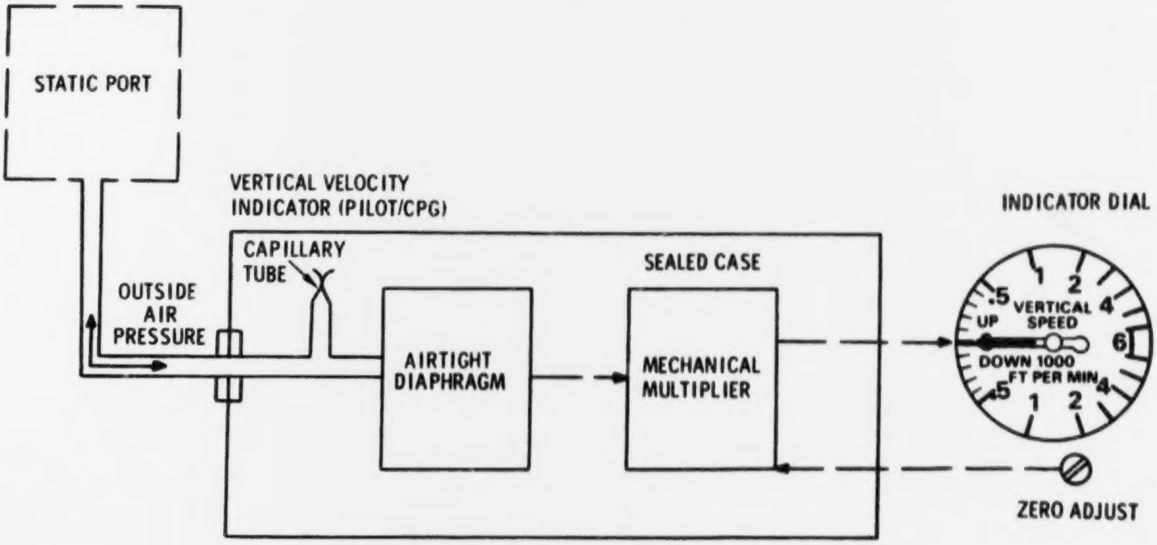
F. Air pressure through the pitot tube builds up inside the indicator as the helicopter moves forward.

G. The expanding diaphragm triggers the mechanical multiplier. The multiplier drives the instrument pointer to display airspeed on the calibrated indicator dial.

8-1-15. VERTICAL VELOCITY INDICATORS DESCRIPTION AND OPERATION 8-1-15


PILOT STATION
A
CPG STATION
A
.5
1
2
4
6
.5
1
2
4

A VERTICAL VELOCITY INDICATOR


STATIC PORT
VERTICAL VELOCITY
INDICATOR (PILOT/CPG)
OUTSIDE
AIR
PRESSURE
CAPILLARY
TUBE
SEALED CASE
AIRTIGHT
DIAPHRAGM
MECHANICAL
MULTIPLIER
INDICATOR DIAL
.5
1
2
4
VERTICAL
SPEED
UP
6
DOWN 1000
FT PER MIN
.5
1
2
4
ZERO ADJUST

MM04-0584A

8-1-15. VERTICAL VELOCITY INDICATORS (VVI) DESCRIPTION AND OPERATION (cont) 8-1-15

A. The vertical velocity indicators are on pilot and copilot/gunner (CPG) instrument panels.

B. The vertical velocity indicators display vertical speed up or down.

C. Vertical speeds can be measured to a maximum rate of 6000 feet per minute.

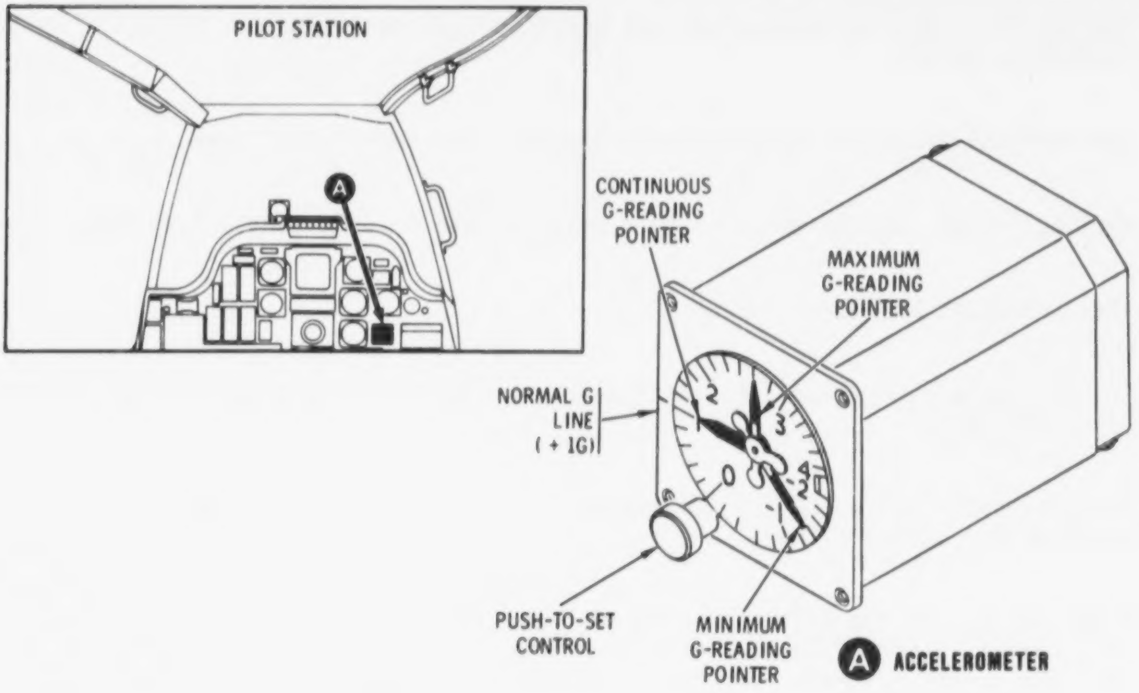
D. The indicators are edge-lighted.

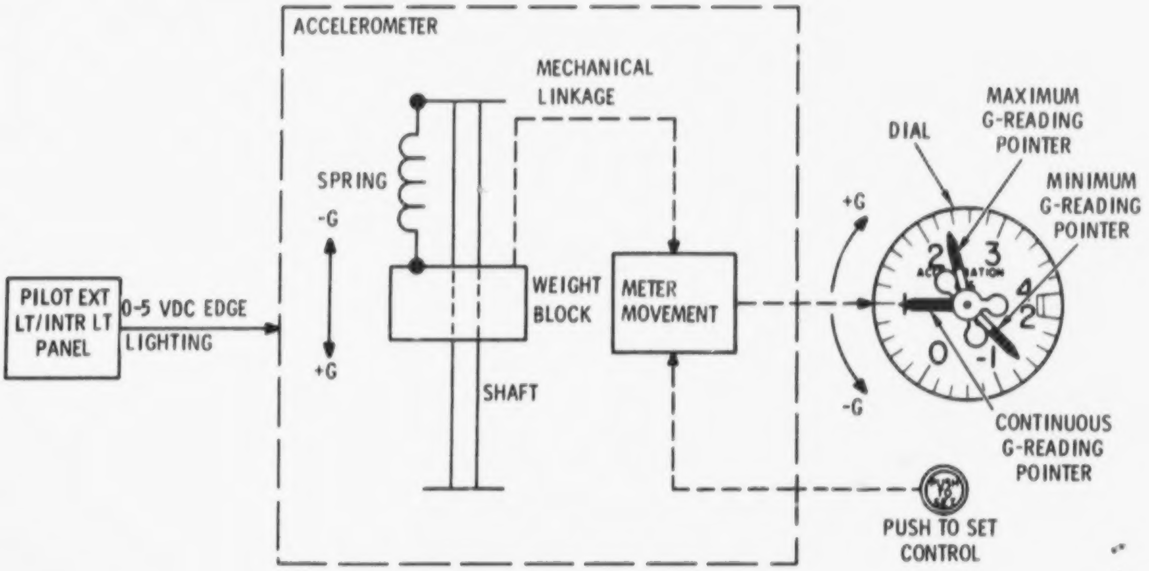
E. The diaphragm is connected to the static port which provides static (outside) air pressure.

F. Air pressures inside and outside the helicopter are equal when the helicopter stays at the same altitude. The indicator pointer reads zero.

G. Pressure outside the helicopter changes when the helicopter moves up or down. This change is sensed by the indicator to move the pointer clockwise to indicate upward movement, and counterclockwise to indicate downward movement.

8-1-16. ACCELEROMETER DESCRIPTION AND OPERATION 8-1-16


PILOT STATION
A
CONTINUOUS G-READING POINTER
MAXIMUM G-READING POINTER
NORMAL G LINE (+1G)
PUSH-TO-SET CONTROL
MINIMUM G-READING POINTER
A ACCELEROMETER


ACCELEROMETER
MECHANICAL LINKAGE
SPRING
-G
+G
WEIGHT BLOCK
METER MOVEMENT
SHAFT
PILOT EXT LT/INTR LT PANEL
0-5 VDC EDGE LIGHTING
DIAL
MAXIMUM G-READING POINTER
MINIMUM G-READING POINTER
+G
-G
CONTINUOUS G-READING POINTER
PUSH TO SET CONTROL

MM04-0585B

8-1-16. ACCELEROMETER DESCRIPTION AND OPERATION (cont)

A. The accelerometer is on the pilot instrument panel.

B. The accelerometer shows positive and negative changes in gravity (g) forces caused by aircraft position changes. Positive gravity forces can be measured to +4g. Negative g forces can be measured to -2g.

C. The accelerometer is edge-lighted from the pilot EXT LT/INTR LT panel.

D. The accelerometer has:

Continuous-g pointer

Maximum-g pointer

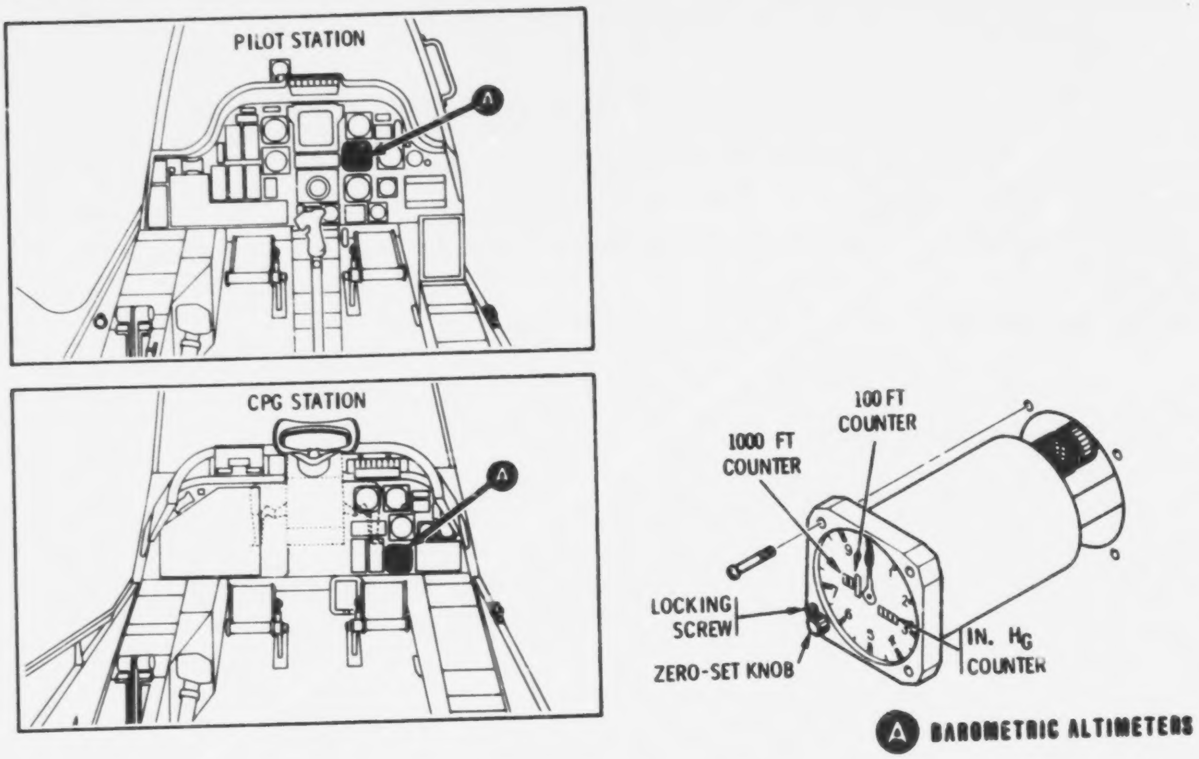
Minimum-g pointer

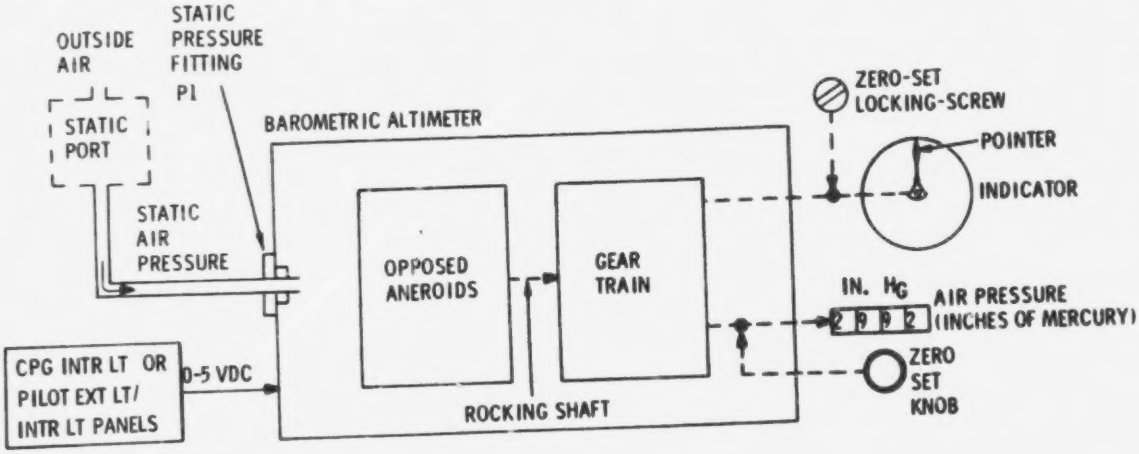
E. Helicopter flight movements move the three pointers. The maximum-g pointer is moved if the aircraft is going up. The minimum-g pointer is moved if the aircraft is going down.

F. The continuous-g pointer shows actual g forces on the aircraft at all times.

G. The maximum- and minimum-g pointers are connected to ratchets. These pointers follow the continuous pointer, but stop and stay at the largest reading reached. Pressing the PUSH TO SET control returns these pointers to +1g.

8-1-16. BAROMETRIC ALTIMETERS DESCRIPTION AND OPERATION 8-1-16


PILOT STATION
A
CPG STATION
A
100 FT COUNTER
1000 FT COUNTER
LOCKING SCREW
ZERO-SET KNOB
IN. H_G COUNTER
A BAROMETRIC ALTIMETERS


OUTSIDE AIR
STATIC PRESSURE FITTING P1
STATIC PORT
BAROMETRIC ALTIMETER
STATIC AIR PRESSURE
OPPOSED ANEROIDS
GEAR TRAIN
ROCKING SHAFT
CPG INTR LT OR PILOT EXT LT/ INTR LT PANELS
0-5 VDC
ZERO-SET LOCKING-SCREW
POINTER
INDICATOR
IN. H_G
2 9 9 2
AIR PRESSURE (INCHES OF MERCURY)
ZERO SET KNOB

MM04-0586C

8-1-17. BAROMETRIC ALTIMETERS DESCRIPTION AND OPERATION (cont)

A. The barometric altimeters are on pilot and copilot/gunner (CPG) instrument panels.

B. The altimeters display aircraft altitude from -1000 to +50,000 feet.

C. The altimeters are edge-lighted.

D. The IN. HG counter displays barometric pressure in inches of mercury. The pilot or CPG sets in sea level barometric pressure, using the zero-set locking screws.

E. The barometric zero-setting knob is used to set the altitude pointer to zero.

F. The altitude pointer indicates hundreds of feet and goes completely around every 1000 feet.

G. The 100 FT readout tracks the altitude pointer. It displays altitude from 0 to 999 feet and restarts at zero every 1000 feet.

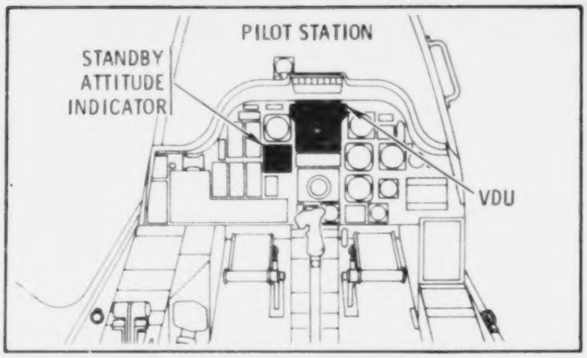
H. The 1000 FT readout records the number of times the pointer goes around.

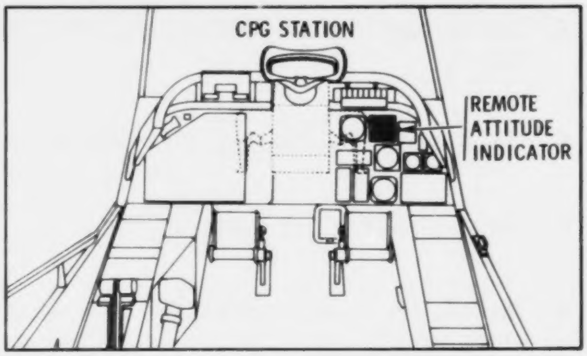
I. The altimeters operate from the action of outside air pressure.

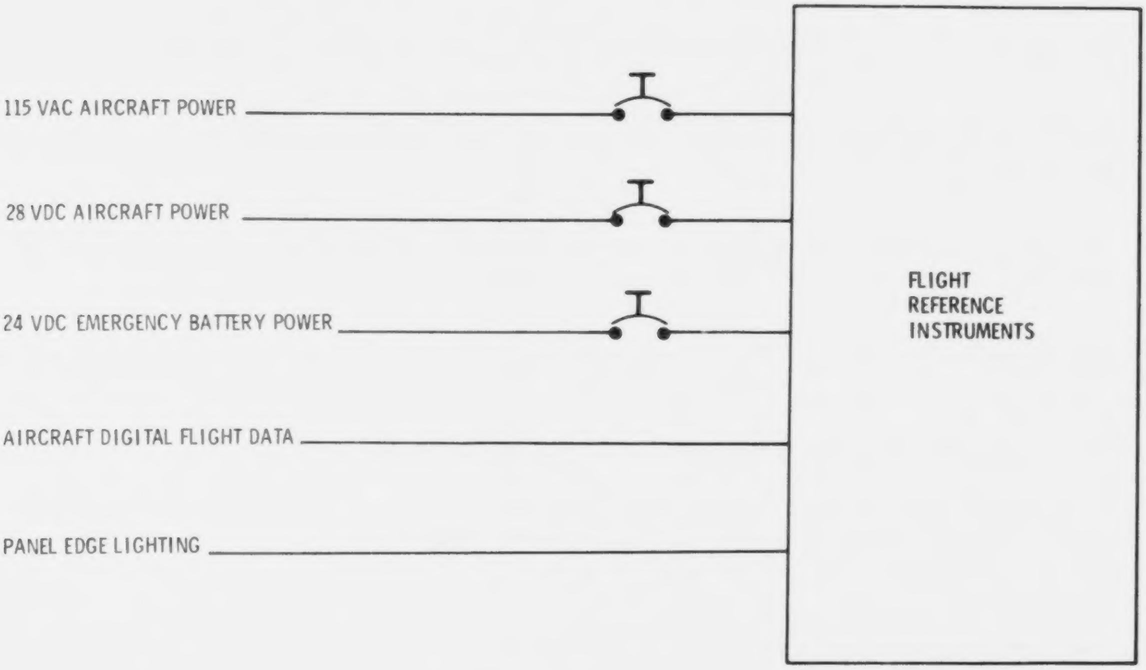
Outside air pressure passes through the air pressure fitting into the sealed case. The air acts instantly on the two opposed aneroids inside the sealed case.

J. The aneroids expand or contract as air pressure changes, which causes the rocking shaft to rotate. This rotation is multiplied by the gear train, which moves the altitude pointer and counters.

8-1-18. FLIGHT REFERENCE INSTRUMENTS DESCRIPTION AND OPERATION 8-1-18


PILOT STATION
STANDBY ATTITUDE INDICATOR
VDU


CPG STATION
REMOTE ATTITUDE INDICATOR


115 VAC AIRCRAFT POWER
28 VDC AIRCRAFT POWER
24 VDC EMERGENCY BATTERY POWER
AIRCRAFT DIGITAL FLIGHT DATA
PANEL EDGE LIGHTING
FLIGHT REFERENCE INSTRUMENTS

MM04-0587A

8-1-18. FLIGHT REFERENCE INSTRUMENTS DESCRIPTION AND OPERATION (cont) 8-1-18

A. The flight reference instruments provide visual displays of helicopter attitude and flight conditions. Flight reference instruments operate from power and flight data inputs.

B. The standby attitude indicator (SAI) is on the pilot's instrument panel.

C. The video display unit (VDU) is on the pilot's instrument panel. It is described in TM 11-1520-238-23.

D. The remote attitude indicator (RAI) is on the copilot/gunner (CPG) instrument panel.

E. The instruments are edge-lighted.

F. Circuit breakers protect the instruments from overload.

G. The instruments operate from the following inputs:

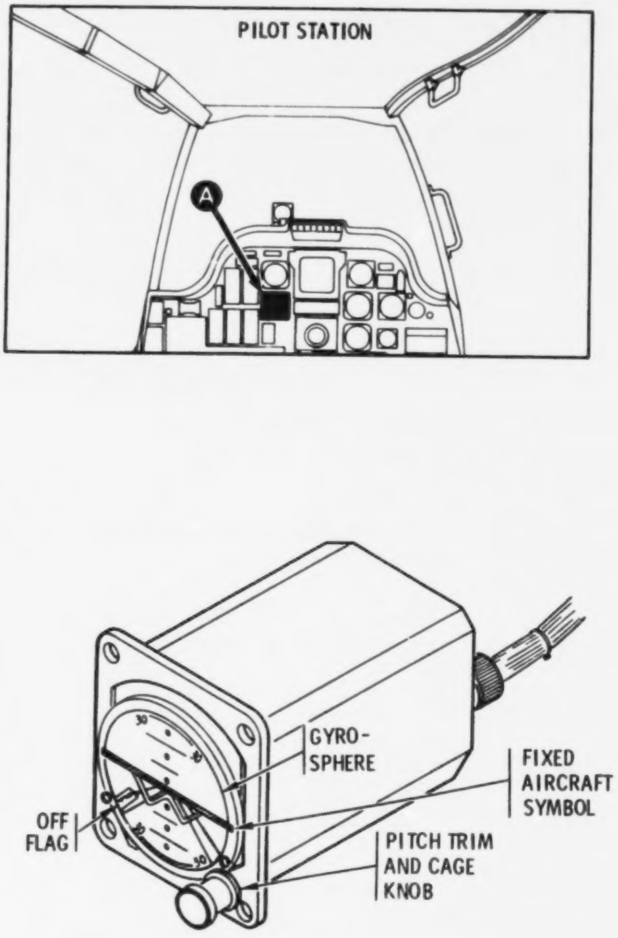
115 VAC, 400 Hz power

28 VDC power (battery 24 VDC if the normal 28 VDC fails)

Helicopter flight data in digital form

0-5 VDC panel edge lighting

8-1-19. STANDBY ATTITUDE INDICATOR (SAI) DESCRIPTION AND OPERATION 8-1-19


PILOT STATION
A
GYRO-SPHERE
FIXED AIRCRAFT SYMBOL
OFF FLAG
PITCH TRIM AND CAGE KNOB

Ⓐ STANDBY ATTITUDE INDICATOR

MM04-0590-1A

8-1-19. STANDBY ATTITUDE INDICATOR (SAI) DESCRIPTION AND OPERATION (cont) 8-1-19

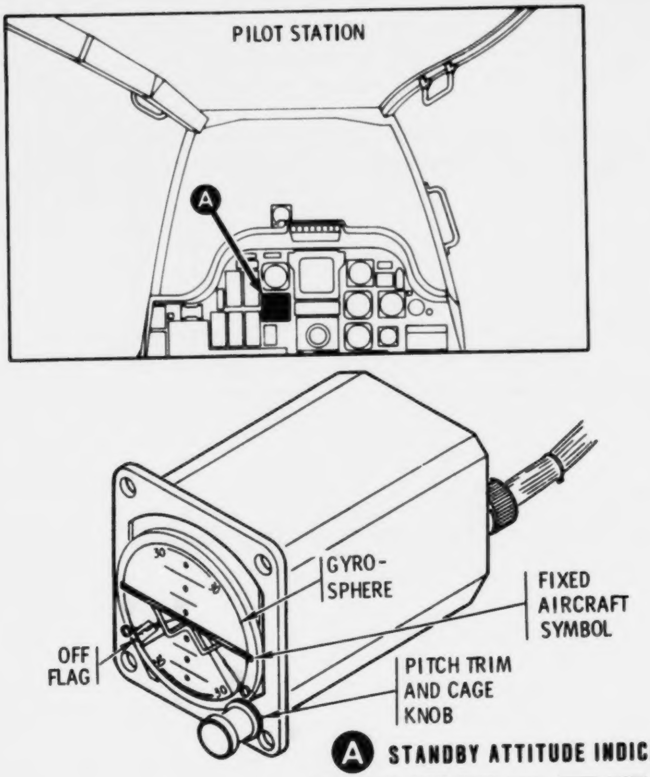
A. The SAI is on the pilot instrument panel.

B. The SAI provides the pilot with an independent, continuous backup display of helicopter attitude. The SAI can display 360 degrees roll, 85 degrees climb pitch, and 85 degrees dive pitch.

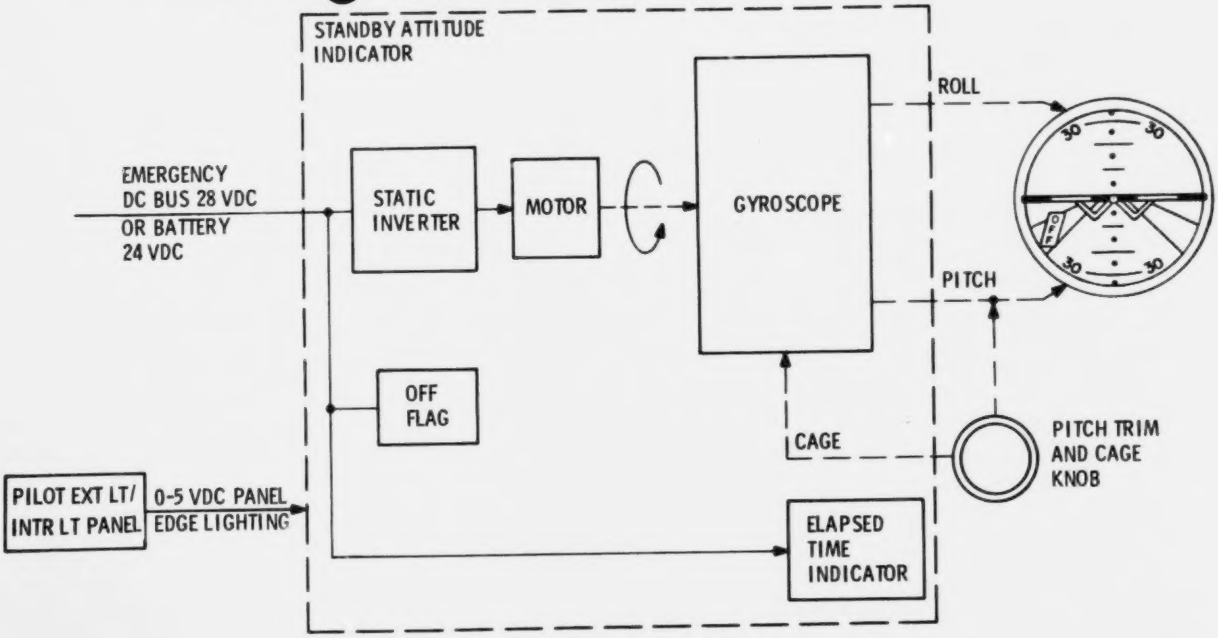
C. The two-color gyrosphere is divided in halves by a white horizon line. The upper (climb) half is grey; the lower (dive) half is black. Degree of pitch is scaled and numbered on both halves. Degree of roll is marked by white lines on the bottom half of the casing. The white markers are at the zero-, 10-, 20-, 30-, 60-, and 90-degree positions.

D. Helicopter attitude is read by comparing the fixed helicopter symbol with the gyrosphere degree markings.

8-1-19. STANDBY ATTITUDE INDICATOR (SAI) DESCRIPTION AND OPERATION (cont) 8-1-19


PILOT STATION
A
GYRO-SPHERE
FIXED AIRCRAFT SYMBOL
OFF FLAG
PITCH TRIM AND CAGE KNOB
30
30
30
30

Ⓐ STANDBY ATTITUDE INDICATOR


STANDBY ATTITUDE INDICATOR
EMERGENCY DC BUS 28 VDC OR BATTERY 24 VDC
STATIC INVERTER
MOTOR
GYROSCOPE
ROLL
PITCH
30
30
30
30
OFF
OFF FLAG
CAGE
PITCH TRIM AND CAGE KNOB
PILOT EXT LT/ INTR LT PANEL
0-5 VDC PANEL EDGE LIGHTING
ELAPSED TIME INDICATOR

MM04-0590-2B

8-1-19. STANDBY ATTITUDE INDICATOR (SAI) DESCRIPTION AND OPERATION (cont) 8-1-19

E. The SAI has the following inputs:

28 VDC or 24 VDC emergency battery power

0-5 VDC edge lighting from the pilot EXT LT/INTR LT panel

F. The SAI operates from 28 VDC from the helicopter emergency DC bus. If primary power is lost, the battery supplies 24 VDC.

G. The static inverter changes incoming power to 26 VDC, 400 Hz.

H. The 26 VDC power runs the motor which spins the gyroscope. The spinning gyroscope produces visual indication of helicopter roll and pitch.

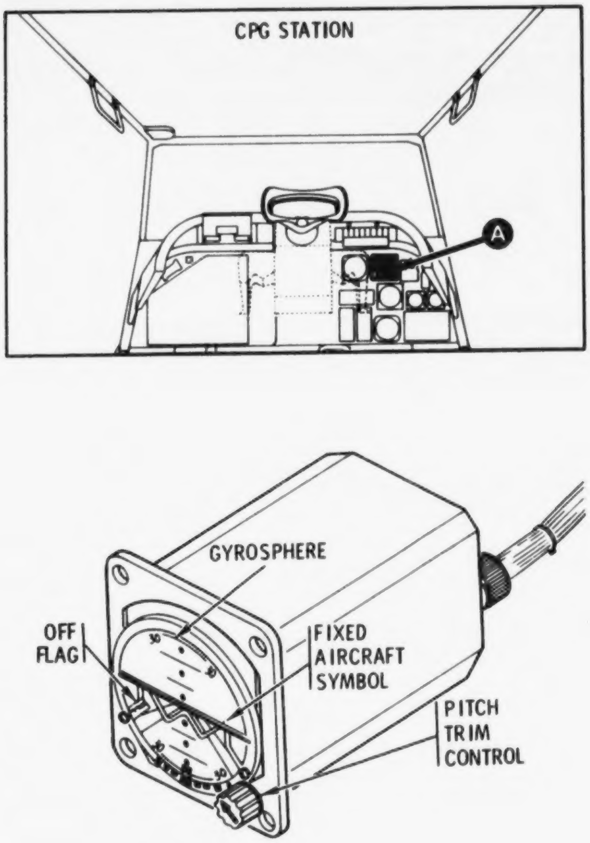
I. The word CLIMB appears on the gyrosphere when helicopter upward pitch reaches +35 degrees. The word DIVE appears on the gyrosphere when downward pitch reaches +35 degrees.

J. The elapsed-time meter keeps track of the total time the SAI operates.

K. The pitch trim control adjusts the pitch of the gyrosphere horizon. It is also used to cage (stop) the gyroscope when not in use.

L. The OFF warning flag is displayed if the gyroscope is caged or power is lost.

8-1-20. REMOTE ATTITUDE INDICATOR (RAI) DESCRIPTION AND OPERATION 8-1-20


CPG STATION
A
GYROSPHERE
OFF FLAG
FIXED AIRCRAFT SYMBOL
PITCH TRIM CONTROL

Ⓐ **REMOTE ATTITUDE INDICATOR**

MM04-0591-1A

8-1-20. REMOTE ATTITUDE INDICATOR (RAI) DESCRIPTION AND OPERATION (cont) 8-1-20

A. The RAI is on the copilot/gunner (CPG) instrument panel.

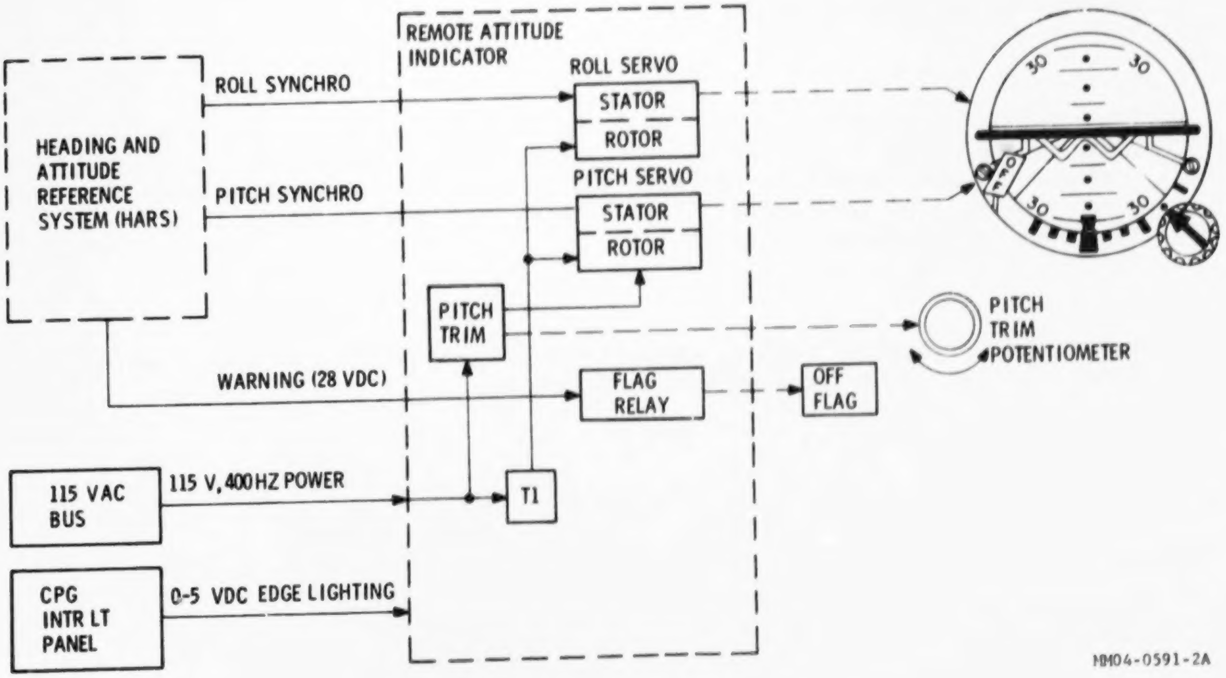
B. The RAI gyrosphere can display 360 degrees horizontal roll, 90 degrees climb pitch, or 90 degrees dive pitch.

C. The RAI is sealed airtight.

D. The two-color gyrosphere is divided in halves by a white horizon line. The upper (climb) half is grey; the lower (dive) half is black. Degree of pitch is scaled and numbered on both halves. Degree of roll is marked by white lines on the bottom half of the casing. The white markers are at the zero-, 10-, 20-, 30-, 60-, and 90-degree positions.

E. Helicopter attitude is read by comparing the fixed helicopter symbol on the cover glass with the gyrosphere degree markings.

8-1-20. REMOTE ATTITUDE INDICATOR (RAI) DESCRIPTION AND OPERATION (cont) 8-1-20


REMOTE ATTITUDE INDICATOR
HEADING AND ATTITUDE REFERENCE SYSTEM (HARS)
ROLL SYNCHRO
PITCH SYNCHRO
ROLL SERVO
STATOR
ROTOR
PITCH SERVO
STATOR
ROTOR
PITCH TRIM
PITCH TRIM POTENTIOMETER
WARNING (28 VDC)
FLAG RELAY
OFF FLAG
115 VAC BUS
115 V, 400HZ POWER
T1
CPG INTR LT PANEL
0-5 VDC EDGE LIGHTING
30
30
30
30

MM04-0591-2A

8-1-20. REMOTE ATTITUDE INDICATOR (RAI) DESCRIPTION AND OPERATION (cont) 8-1-20

G. The RAI has the following inputs:

115 VAC, 400 Hz power bus

0-5 VDC edge lighting from the copilot/gunner (CPG) INTR LT panel

Roll and pitch synchro signals from the heading and attitude reference system (HARS)

A 28 VDC warning signal from the HARS if it fails

H. The RAI operates from 115 VAC, single-phase, 400 Hz applied to the RAI pitch trim control and stepdown transformer T1.

I. The pitch trim control changes the 115 VAC when the control knob is turned. The changing voltages cause the gyrosphere to adjust its horizon line up or down.

J. The word CLIMB is visible on the gyrosphere when helicopter climb pitch reaches 35 degrees. The word DIVE is visible on the gyrosphere when dive pitch reaches 35 degrees.

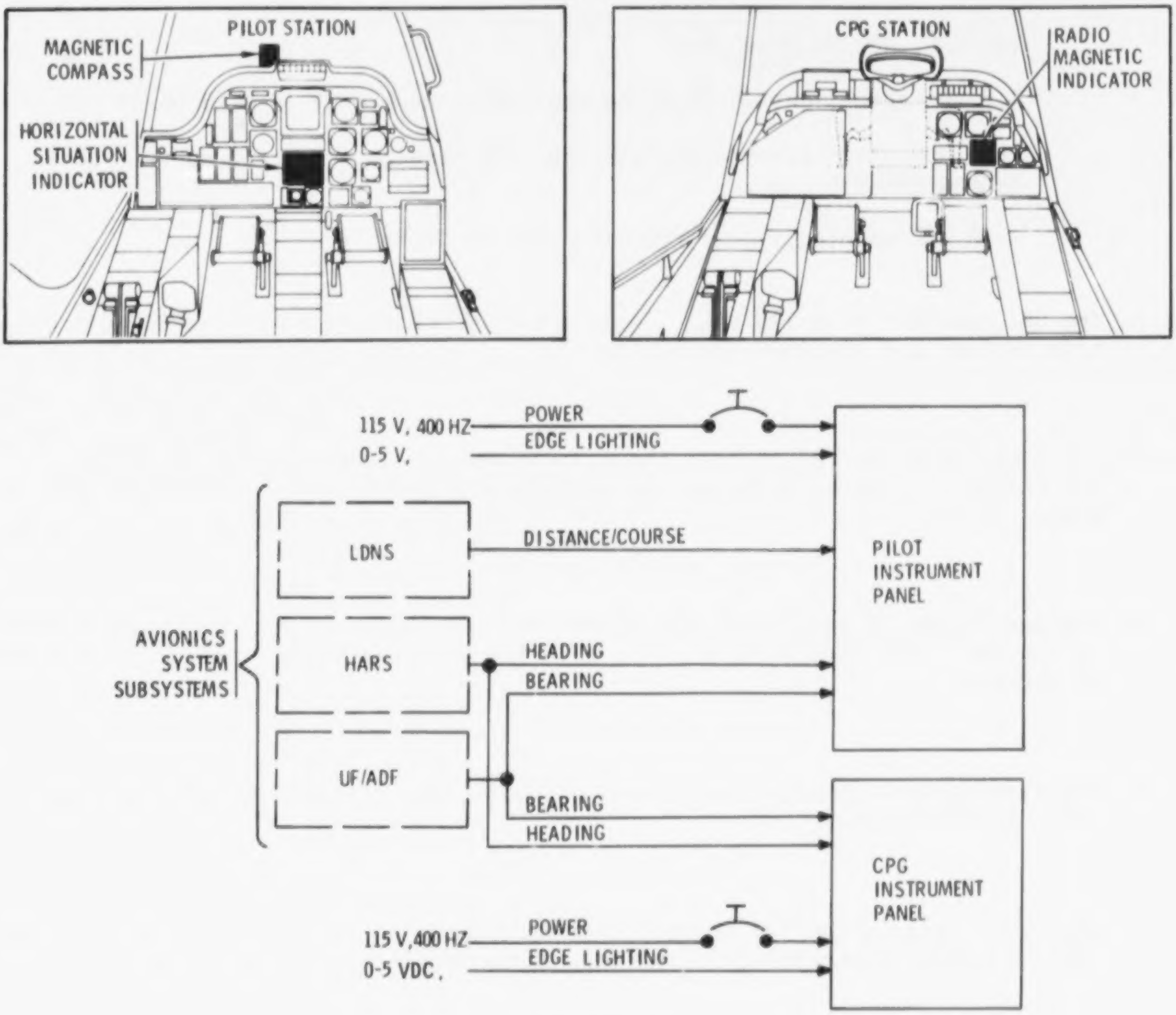
K. The transformer converts the 115 VAC to excitation voltages for the roll and pitch servo rotors.

L. HARS roll data is applied as roll synchro signals to the RAI roll servo stator. These signals rotate the gyrosphere to a new degree-of-roll position.

M. HARS pitch data is applied as pitch synchro signals to the RAI pitch servo stator. These signals move the gyrosphere up or down to a new pitch position.

N. A 28 VDC signal is sent to the RAI flag relay if the HARS fails. This signal displays the OFF flag.

8-1-21. NAVIGATION INSTRUMENTS DESCRIPTION AND OPERATION 8-1-21


PILOT STATION
MAGNETIC COMPASS
HORIZONTAL SITUATION INDICATOR
CPG STATION
RADIO MAGNETIC INDICATOR
115 V, 400 HZ
POWER
0-5 V,
EDGE LIGHTING
AVIONICS SYSTEM SUBSYSTEMS
LDNS
DISTANCE/COURSE
HARS
HEADING
BEARING
UF/ADF
BEARING
HEADING
PILOT INSTRUMENT PANEL
CPG INSTRUMENT PANEL
115 V,400 HZ
POWER
0-5 VDC,
EDGE LIGHTING

MM04-0592A

8-1-21. NAVIGATION INSTRUMENTS DESCRIPTION AND OPERATION (cont) 8-1-21

A. The navigation instruments measure and display helicopter position, heading, and course with relation to the ground.

B. A magnetic compass and horizontal situation indicator (HSI) are on the instrument panel in the pilot station. (The HSI is described in TM 11-1520-238-23.)

C. A radio magnetic indicator (RMI) is on the instrument panel in the copilot/gunner (CPG) station. (This instrument is described in TM 11-1520-238-23.)

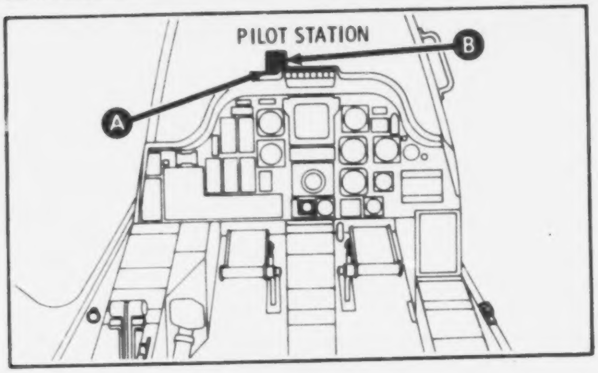
D. All controls and displays are on each instrument.

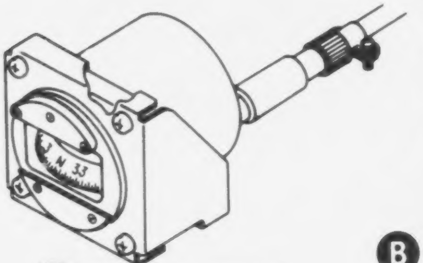
E. The pilot HSI and CPG RMI instruments are protected by circuit breakers.

F. All indicators are edge-lighted.

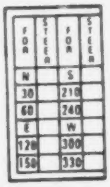
G. The pilot magnetic compass receives impulses from the earth's magnetic field.

8-1-22. MAGNETIC COMPASS DESCRIPTION AND OPERATION (cont) 8-1-22


PILOT STATION
A
B

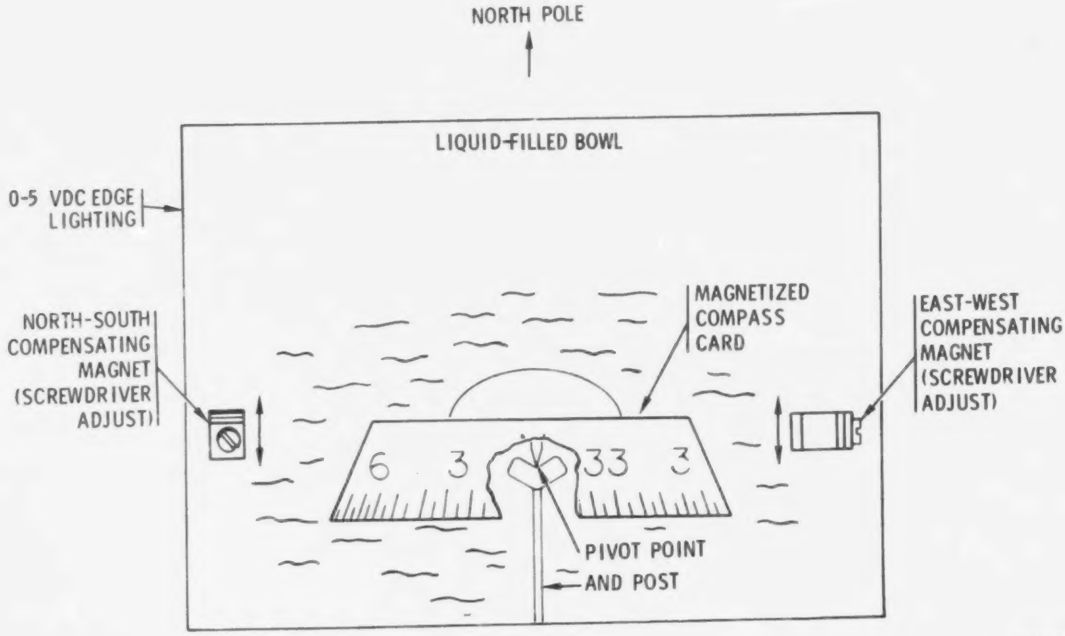


Ⓐ **MAGNETIC COMPASS**



FOR	STEER	FOR	STEER
N		S	
30		210	
60		240	
E		W	
120		300	
150		330	

Ⓑ **CORRECTION CARD**


NORTH POLE
LIQUID-FILLED BOWL
0-5 VDC EDGE LIGHTING
NORTH-SOUTH COMPENSATING MAGNET (SCREWDRIVER ADJUST)
MAGNETIZED COMPASS CARD
EAST-WEST COMPENSATING MAGNET (SCREWDRIVER ADJUST)
6
3
33
3
PIVOT POINT
AND POST

MM04-0593A

8-1-22. MAGNETIC COMPASS DESCRIPTION AND OPERATION (cont) 8-1-22

A. The magnetic compass is on a panel in the pilot station.

B. The magnetic compass displays the aircraft magnetic heading in relation to the North Pole. It displays headings from zero thru 360 degrees.

C. The magnetic compass is liquid-filled to keep vibration from affecting its operation.

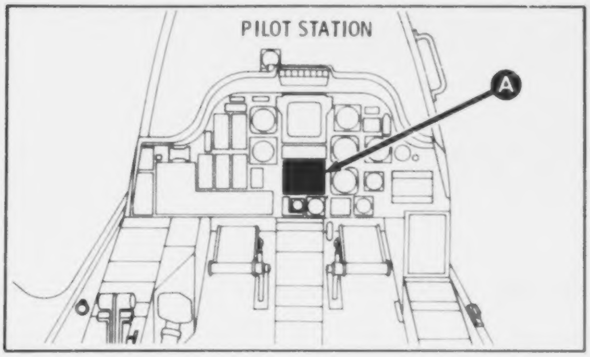
D. The offsetting magnets adjust the compass pointer to true magnetic north. They correct the compass error caused by magnetic forces of the helicopter structure.

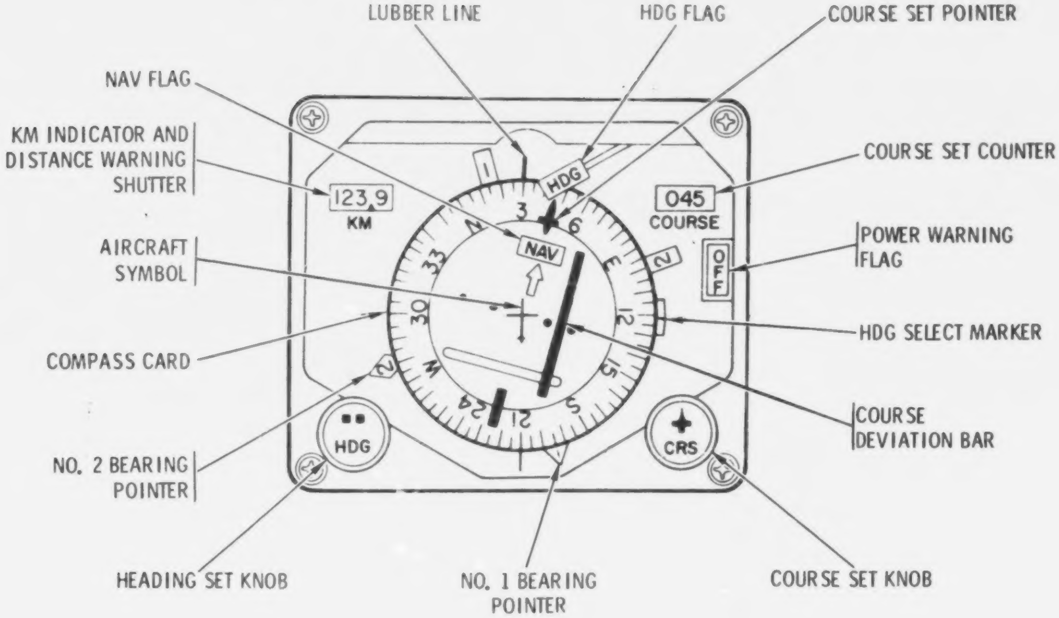
E. A compass correction card is provided to note compass errors that remain after magnet correction.

F. The compass card rotates on the pivot point inside the liquid-filled and sealed compass bowl. The compass card lines up with earth's magnetic field.

G. The instrument is edge-lighted.

8-1-23. HORIZONTAL SITUATION INDICATOR (HSI) DESCRIPTION AND OPERATION 8-1-23


PILOT STATION
A


LUBBER LINE
HDG FLAG
COURSE SET POINTER
NAV FLAG
KM INDICATOR AND DISTANCE WARNING SHUTTER
COURSE SET COUNTER
POWER WARNING FLAG
AIRCRAFT SYMBOL
HDG SELECT MARKER
COMPASS CARD
COURSE DEVIATION BAR
NO. 2 BEARING POINTER
HEADING SET KNOB
NO. 1 BEARING POINTER
COURSE SET KNOB
123.9
KM
045
COURSE
NAV
HDG
OFF
CRS
N
3
6
E
12
15
S
21
24
W
30
33
1
2

A HORIZONTAL SITUATION INDICATOR (HSI)

MM04-1332-1A

8-1-23. HORIZONTAL SITUATION INDICATOR (HSI) DESCRIPTION AND OPERATION (cont)

A. The HSI is on the pilot instrument panel.

B. The HSI has an airtight case; and instrument face with the following indicators and controls:

Compass card that can rotate 360 degrees

Lubber line at the top of the dial for compass reference

Fixed aircraft symbol in center of the compass card and alined with the lubber line

Two bearing pointers that can rotate around the compass card

Course deviation bar that moves from side to side

Kilometer (KM) indicator - Distance to destination digital readout in kilometers

Distance warning shutter that can move down to partially cover the KM indicator

Heading (HDG) select marker that is positioned around the compass card by the heading set knob

Course set pointer that is positioned around the compass card by the course set knob

Course set counter - Digital readout of course as set by the course set knob

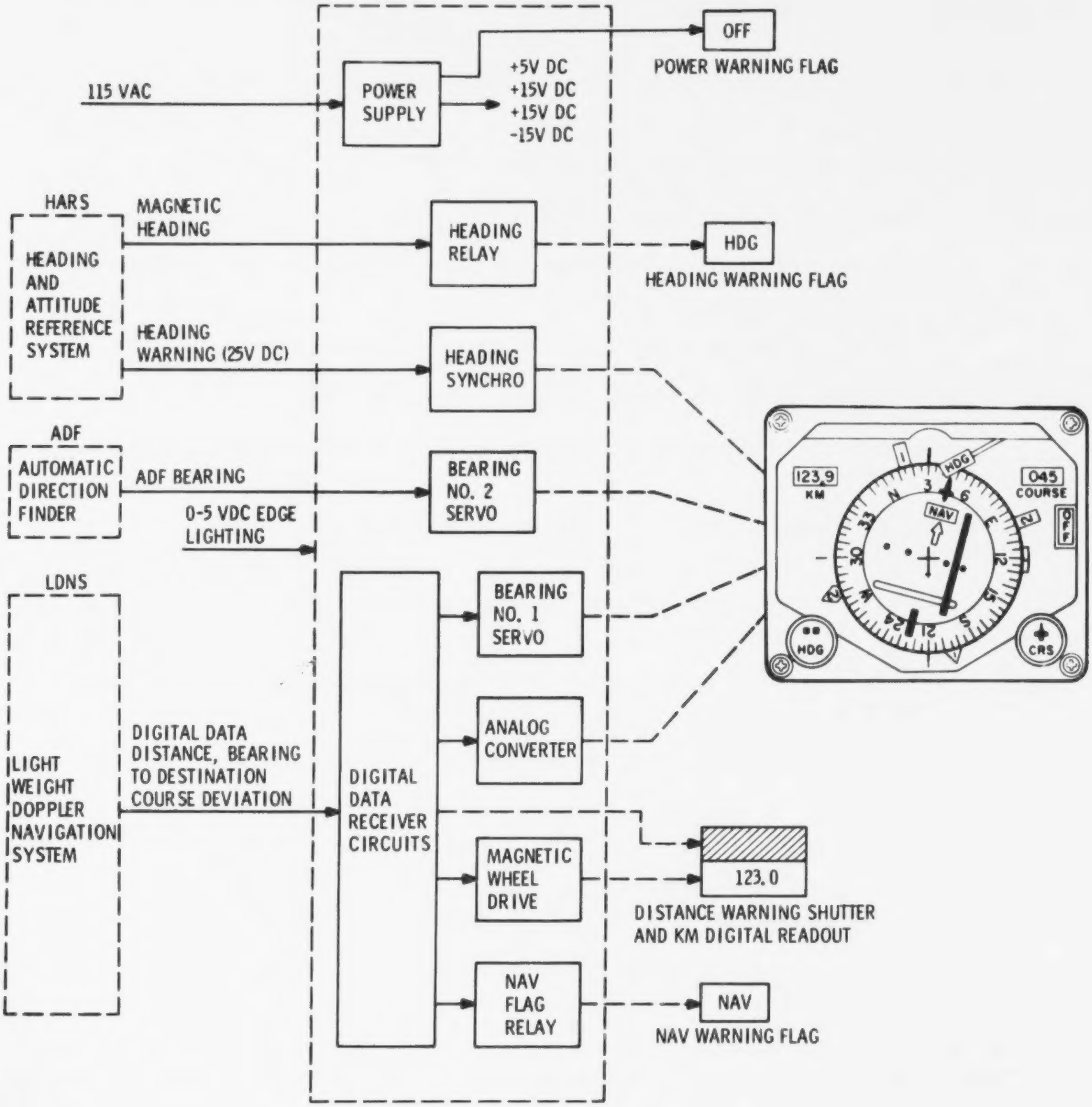
Power warning flag to indicate failure of input power or internal power supply

NAV flag - Retractable navigation warning indicator

HDG flag - Retractable heading warning indicator

C. The airtight case contains electronic and electromechanical devices. They change input signals and voltage into usable signals to drive the indicators.

8-1-23. HORIZONTAL SITUATION INDICATOR (HSI) DESCRIPTION AND OPERATION (cont) 8-1-23


115 VAC
POWER SUPPLY
+5V DC
+15V DC
+15V DC
-15V DC
OFF
POWER WARNING FLAG
HARS
HEADING AND ATTITUDE REFERENCE SYSTEM
MAGNETIC HEADING
HEADING RELAY
HDG
HEADING WARNING FLAG
HEADING WARNING (25V DC)
HEADING SYNCHRO
ADF
AUTOMATIC DIRECTION FINDER
ADF BEARING
BEARING NO. 2 SERVO
0-5 VDC EDGE LIGHTING
123.9
KM
045
COURSE
OFF
NAV
HDG
CRS
N
3
6
E
12
15
S
21
24
W
30
33
LDNS
LIGHT WEIGHT DOPPLER NAVIGATION SYSTEM
DIGITAL DATA DISTANCE, BEARING TO DESTINATION COURSE DEVIATION
DIGITAL DATA RECEIVER CIRCUITS
BEARING NO. 1 SERVO
ANALOG CONVERTER
MAGNETIC WHEEL DRIVE
123.0
DISTANCE WARNING SHUTTER AND KM DIGITAL READOUT
NAV FLAG RELAY
NAV
NAV WARNING FLAG

MM04-1332-2A

8-1-23. HORIZONTAL SITUATION INDICATOR (HSI) DESCRIPTION AND OPERATION (cont) 8-1-23

D. The HSI receives the following inputs:

115 VAC from the essential AC bus

0-5 VDC edge-lighting from the pilot EXT LT/INTR LT panel

Magnetic heading and 28 VDC heading warning from the heading and attitude reference system (HARS)

Bearing to an automatic direction finder (ADF) station from the ADF system

Digital data from the lightweight doppler navigation system (LDNS)

E. The HSI operates as follows:

The 115 VAC input is applied to the HSI power supply. The power supply provides voltages to operate the HSI.

If input power or HSI power supply fails, the power warning flag is displayed.

The HARS magnetic heading input signal causes the heading synchro to position the compass card. The card is rotated one degree for each one-degree change in helicopter heading. The 28 VDC heading warning signal to the heading relay decreases if the HARS fails. The relay then causes the HDG warning flag to be displayed.

The ADF bearing signal causes the bearing No. 2 servo to rotate the No. 2 bearing pointer. The No. 2 bearing pointer indicates the helicopter relative bearing to the ADF station.

Digital data signals from the LDNS are course deviation bearing and distance to destination. The HSI digital data receiver circuits convert these signals to display drive signals.

LDNS distance signals are applied through the magnetic wheel drive to the KM digital readout. Distance to destination is displayed in kilometers. The distance warning shutter drops to partly cover the KM readout if LDNS distance is invalid.

E. (cont)

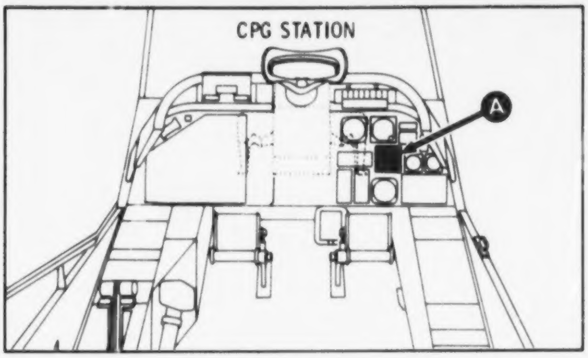
LDNS bearing signals are applied through bearing No. 1 servo to bearing No. 1 pointer. The signals rotate the pointer to show the helicopter relative bearing to a selected point. The NAV flag relay causes the NAV warning flag to be displayed if the LDNS fails.

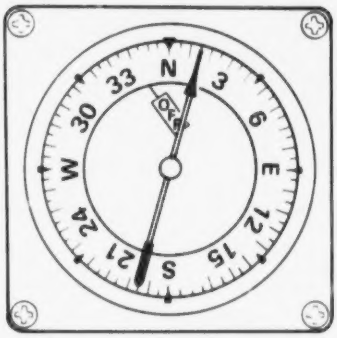
LDNS course deviation signals are converted to analog voltage by the HSI analog converter. The course deviation bar is deflected left or right according to the direction of change error if the actual helicopter course changes from the selected course.

The CRS set knob positions the course pointer on the compass card. It also sets the course selected on the compass card into the COURSE counter display. After it has been set, the course pointer rotates with the compass card.

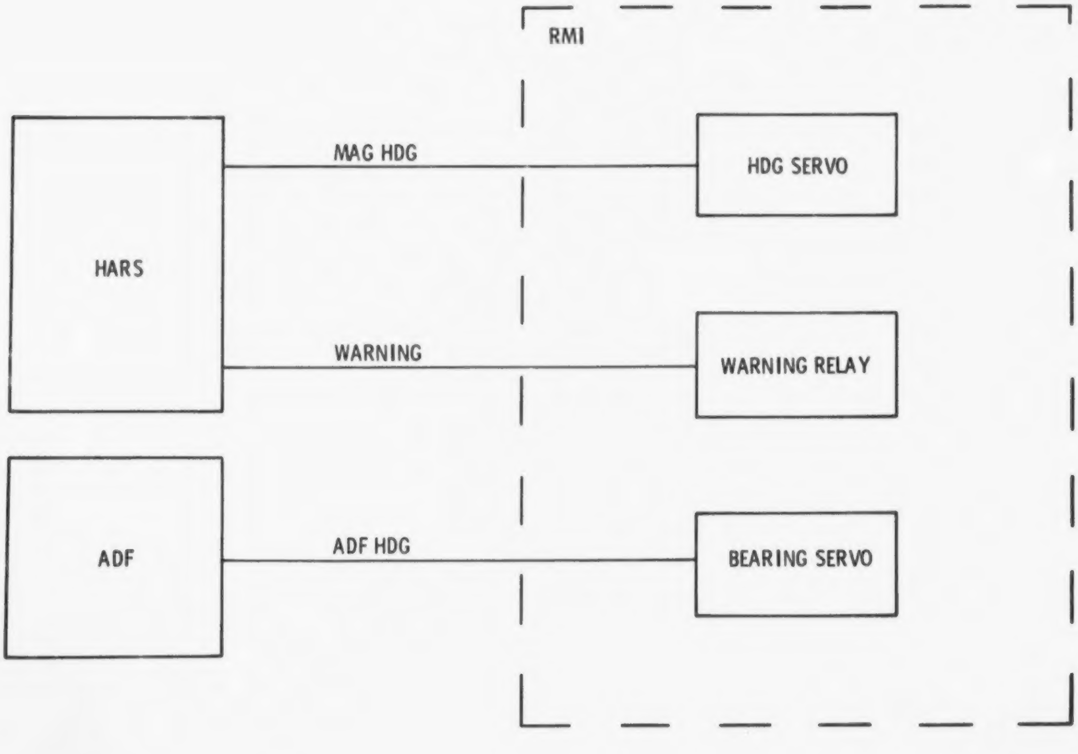
The HDG set knob positions the heading marker on the compass card. After it is set, the heading marker rotates with the compass card.

8-1-24. RADIO MAGNETIC INDICATOR (RMI) DESCRIPTION AND OPERATION 8-1-24


CPG STATION
A


N
3
6
E
12
15
S
21
24
W
30
33
OFF

A RADIO MAGNETIC INDICATOR


RMI
HARS
MAG HDG
HDG SERVO
WARNING
WARNING RELAY
ADF
ADF HDG
BEARING SERVO

8-1-24. RADIO MAGNETIC INDICATOR (RMI) DESCRIPTION AND OPERATION (cont) 8-1-24

A. The RMI is on the CPG right instrument panel.

B. The radio magnetic indicator has an electronic box mounted behind the front display panel. The electronic box contains a heading servo, warning relay, and bearing servo.

C. The front display panel has a compass card, pointer, and a heading OFF warning flag.

D. The radio magnetic indicator receives the following inputs:

Magnetic heading information from the heading and attitude reference system (HARS) on the rotating compass card

Aircraft magnetic heading in degrees on the rotating compass card

Direction to the station selected by the pilot on the area direction finder (ADF) pointer

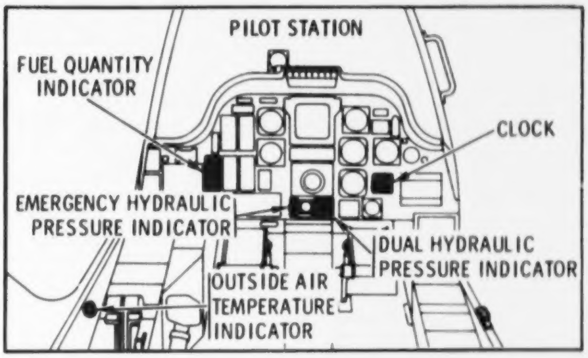
Power to the servos from a transformer

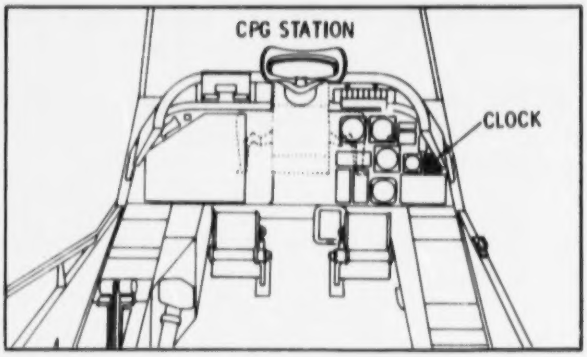
Edge lighting from the CPG **INTR LT** panel

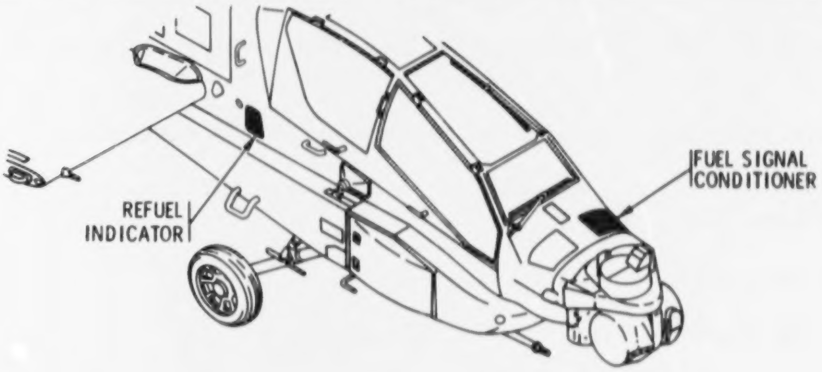
E. The OFF flag will be displayed when HARS heading information is unreliable.

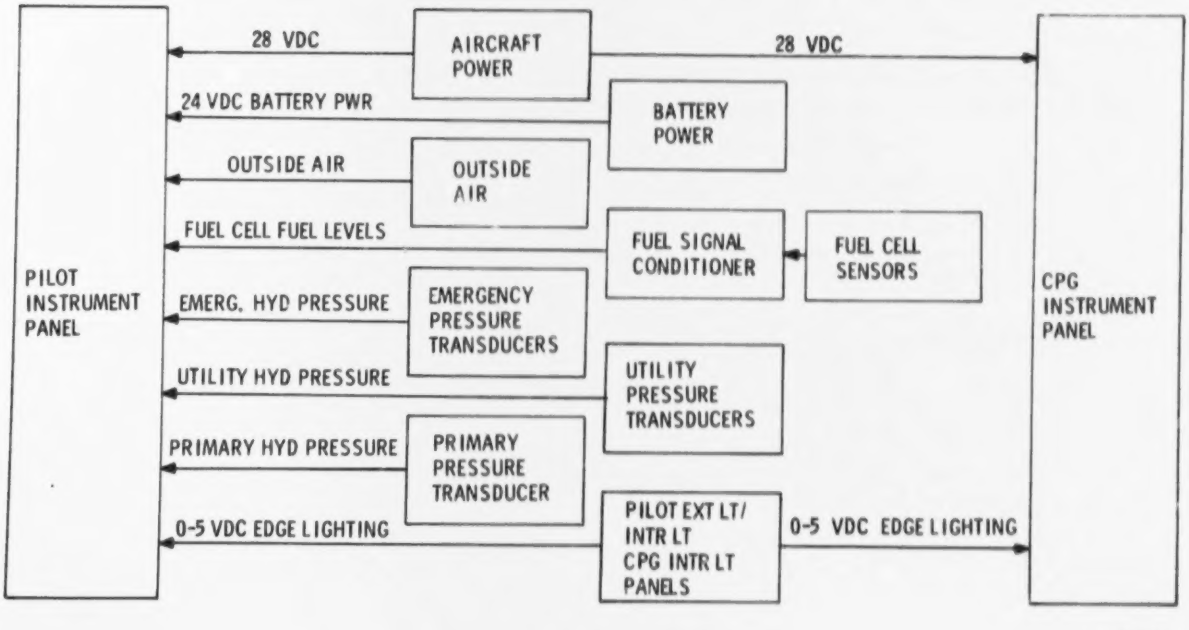
F. Operation is automatic when the **ATTD IND** circuit breaker on the CPG circuit breaker panel is closed and the helicopter has AC power.

8-1-25. MISCELLANEOUS INSTRUMENTS DESCRIPTION AND OPERATIONS 8-1-25


PILOT STATION
FUEL QUANTITY INDICATOR
CLOCK
EMERGENCY HYDRAULIC PRESSURE INDICATOR
DUAL HYDRAULIC PRESSURE INDICATOR
OUTSIDE AIR TEMPERATURE INDICATOR


CPG STATION
CLOCK


FUEL SIGNAL CONDITIONER
REFUEL INDICATOR


PILOT INSTRUMENT PANEL
28 VDC
AIRCRAFT POWER
28 VDC
24 VDC BATTERY PWR
BATTERY POWER
OUTSIDE AIR
OUTSIDE AIR
FUEL CELL FUEL LEVELS
FUEL SIGNAL CONDITIONER
FUEL CELL SENSORS
EMERG. HYD PRESSURE
EMERGENCY PRESSURE TRANSDUCERS
UTILITY HYD PRESSURE
UTILITY PRESSURE TRANSDUCERS
PRIMARY HYD PRESSURE
PRIMARY PRESSURE TRANSDUCER
0-5 VDC EDGE LIGHTING
PILOT EXT LT/ INTR LT CPG INTR LT PANELS
0-5 VDC EDGE LIGHTING
CPG INSTRUMENT PANEL

MM04-0596B

8-1-25. MISCELLANEOUS INSTRUMENTS DESCRIPTION AND OPERATIONS (cont) 8-1-25

A. The miscellaneous instruments display hydraulic pressure, fuel quantity, outside temperature, and time. Miscellaneous instruments in the pilot station are:

Dual hydraulic pressure indicator

Emergency hydraulic pressure indicator

Fuel quantity indicator

Outside air temperature indicator

Clock

B. A clock is in the copilot/gunner (CPG) station.

C. A refuel indicator is on the forward right side of the fuselage (access door R160).

D. The indicators are edge-lighted.

E. All controls and displays are on each instrument.

F. The instruments receive inputs from:

Pressure sensors in the hydraulic systems

A fuel signal conditioner (FSC) and fuel quantity sensors in the forward and aft fuel cells

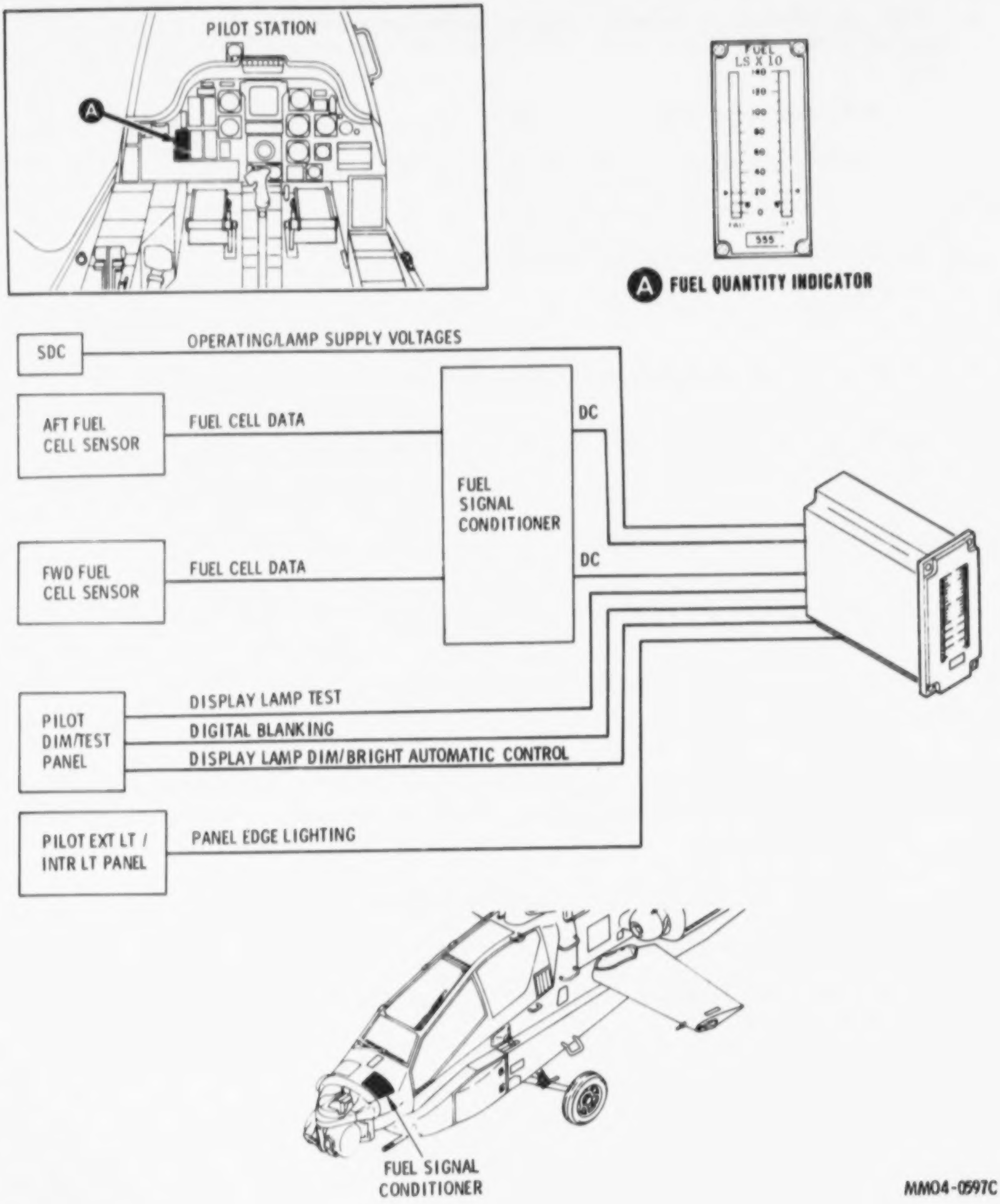
Outside air

28 VDC from the signal data converter (SDC)

24 VDC from the battery

0-5 VDC edge-lighting from the pilot **EXT LT/INTR LT** panel and the CPG **INTR LT** panel

8-1-26. FUEL QUANTITY INDICATOR DESCRIPTION AND OPERATION 8-1-26


PILOT STATION
A
FUEL
LS X 10
140
120
100
80
60
40
20
0
555
A FUEL QUANTITY INDICATOR
SDC
OPERATING/LAMP SUPPLY VOLTAGES
AFT FUEL CELL SENSOR
FUEL CELL DATA
FUEL SIGNAL CONDITIONER
DC
FWD FUEL CELL SENSOR
FUEL CELL DATA
DC
PILOT DIM/TEST PANEL
DISPLAY LAMP TEST
DIGITAL BLANKING
DISPLAY LAMP DIM/BRIGHT AUTOMATIC CONTROL
PILOT EXT LT / INTR LT PANEL
PANEL EDGE LIGHTING
FUEL SIGNAL CONDITIONER

MM04-0597C

8-1-26. FUEL QUANTITY INDICATOR DESCRIPTION AND OPERATION (cont) 8-1-26

A. The fuel quantity indicator is on the pilot instrument panel.

B. The indicator has an electronic box mounted behind a front display panel.

C. The front display panel has two vertical scale displays that are positioned side-by-side. A digital readout is mounted below the two vertical scale displays.

D. Fuel quantity in the forward fuel cell is displayed on the display panel on the left side. Fuel quantity in the aft fuel cell is displayed on the display panel on the right side. Total fuel quantity of the two fuel cells is displayed on the digital readout.

E. The indicator is controlled at the pilot DIM/TEST panel DGT OFF/NORM/TST switch.

F. The indicator receives the following inputs:

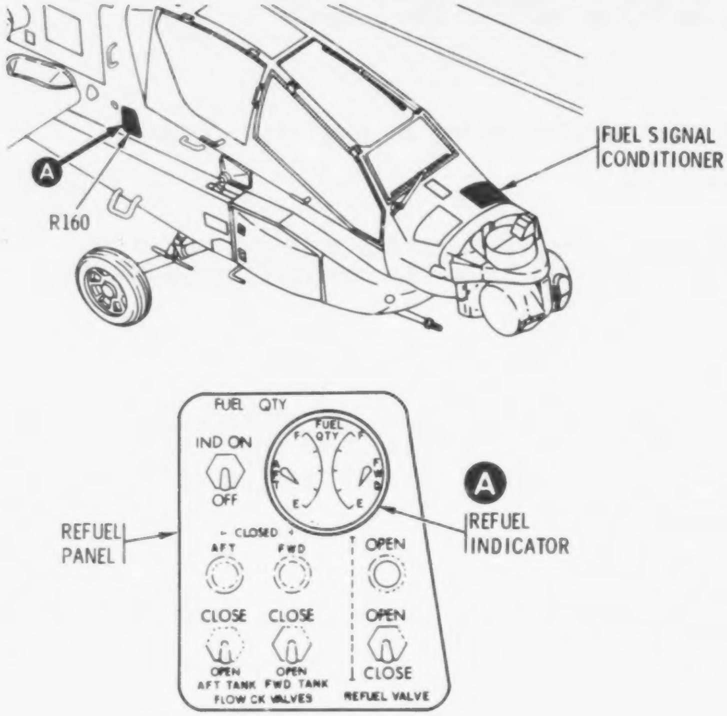
Operating and display lamp power from the signal data converter (SDC)

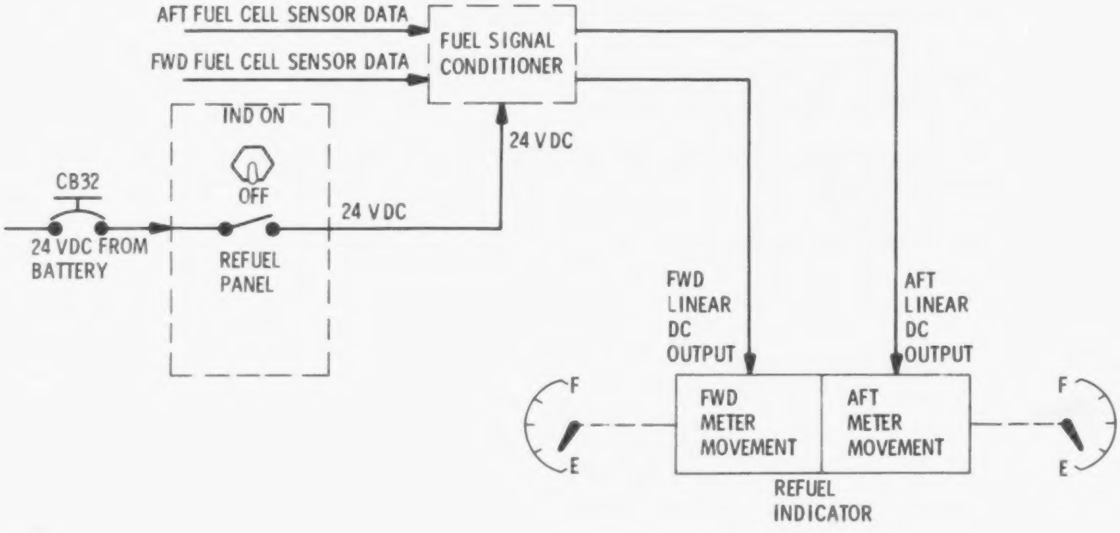
Linear 0-5 VDC (converted from forward/aft fuel cell sensor data by the fuel signal conditioner).

Lamp test, lamp dimming, and digital blanking signals from the pilot DIM/TEST panel

Edge-lighting power from the pilot EXT LT/INTR LT panel

8-1-27. REFUEL INDICATOR DESCRIPTION AND OPERATION 8-1-27


FUEL SIGNAL CONDITIONER
A
R160
FUEL QTY
IND ON
OFF
FUEL QTY
F
E
A
REFUEL INDICATOR
REFUEL PANEL
CLOSED
AFT
FWD
OPEN
CLOSE
CLOSE
OPEN
OPEN
OPEN
CLOSE
AFT TANK
FWD TANK
FLOW CK VALVES
REFUEL VALVE


AFT FUEL CELL SENSOR DATA
FWD FUEL CELL SENSOR DATA
FUEL SIGNAL CONDITIONER
24 V DC
IND ON
OFF
CB32
24 VDC FROM BATTERY
24 V DC
REFUEL PANEL
FWD LINEAR DC OUTPUT
AFT LINEAR DC OUTPUT
F
E
FWD METER MOVEMENT
AFT METER MOVEMENT
F
E
REFUEL INDICATOR

MM04-0598B

8-1-27. REFUEL INDICATOR DESCRIPTION AND OPERATION (cont) 8-1-27

A. The refuel indicator is on the forward right side of the fuselage (access door R160).

B. The refuel indicator has two scales and two movable pointers. One scale measures fuel level in the aft fuel cell. The other scale measures fuel level in the forward cell.

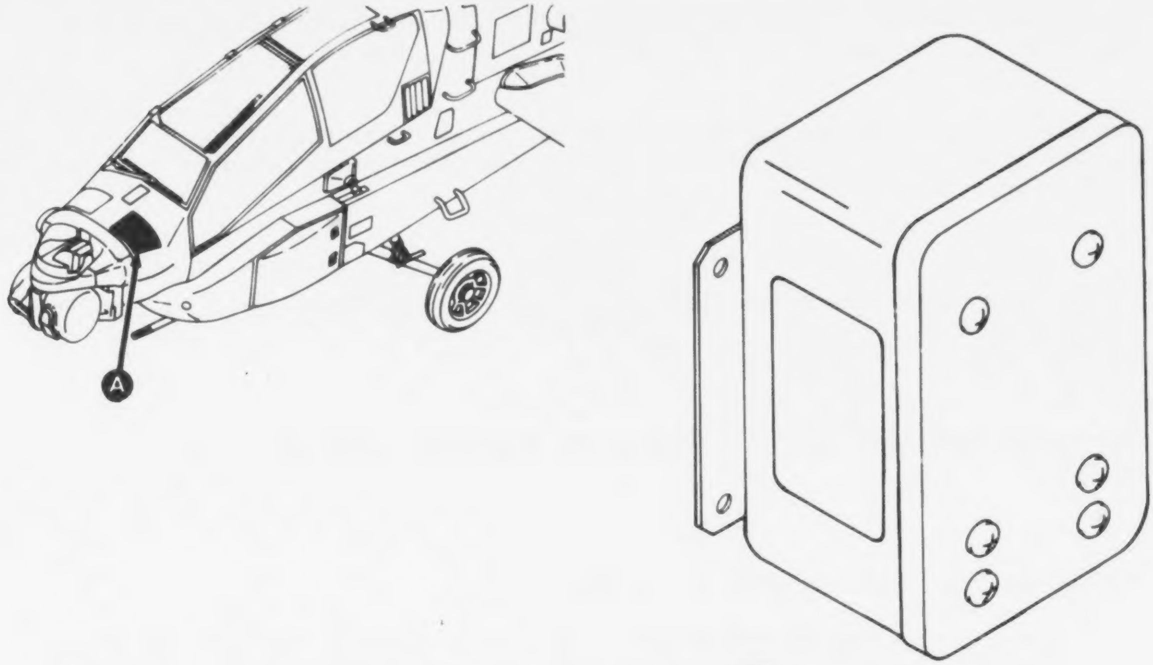
C. The pointers move between the scale "E" (empty) and "F" (full) markers as fuel levels change.

D. The refuel indicator is controlled by the fuselage refuel panel IND ON/OFF switch.

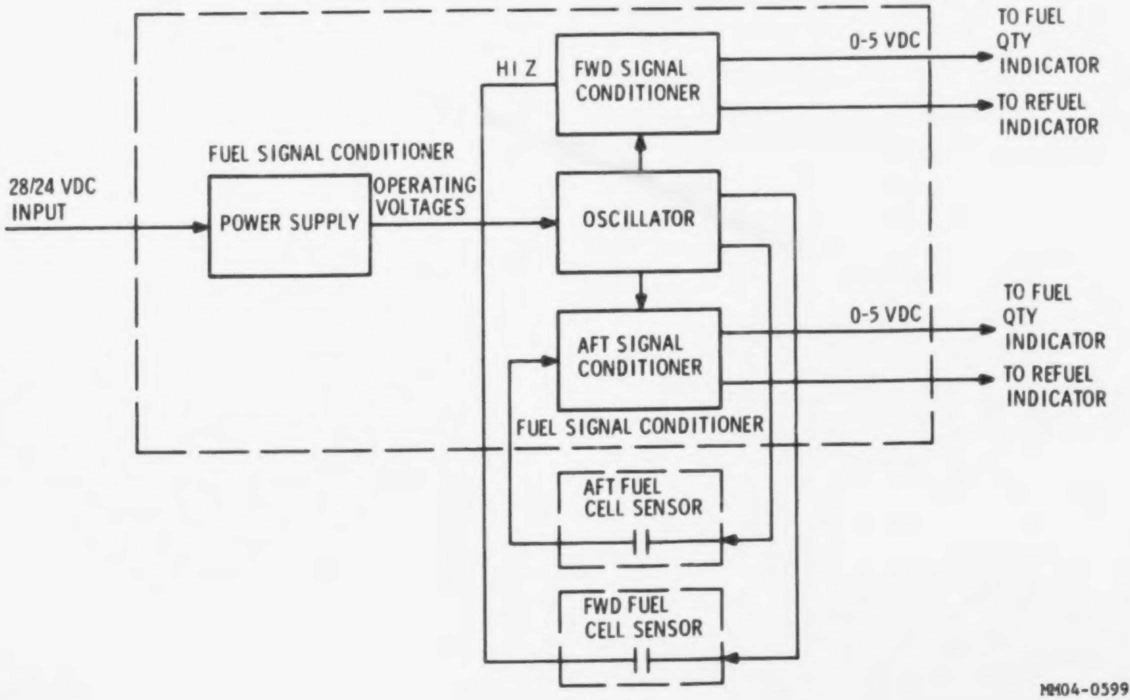
E. The refuel indicator operates as follows:

Battery-supplied 24 VDC provides operating voltages for the fuel signal conditioner (FSC). The FSC converts signals from the forward/aft fuel cell sensors to linear 0-5 VDC. The refuel indicator meter movements change linear DC voltages to mechanical outputs. These outputs move the pointers along the scale.

8-1-28. FUEL SIGNAL CONDITIONER (FSC) DESCRIPTION AND OPERATION 8-1-28



A FUEL SIGNAL CONDITIONER


28/24 VDC
INPUT
FUEL SIGNAL CONDITIONER
POWER SUPPLY
OPERATING
VOLTAGES
HI Z
FWD SIGNAL
CONDITIONER
0-5 VDC
TO FUEL
QTY
INDICATOR
TO REFUEL
INDICATOR
OSCILLATOR
AFT SIGNAL
CONDITIONER
0-5 VDC
TO FUEL
QTY
INDICATOR
TO REFUEL
INDICATOR
FUEL SIGNAL CONDITIONER
AFT FUEL
CELL SENSOR
FWD FUEL
CELL SENSOR

MM04-0599B

8-1-28. FUEL SIGNAL CONDITIONER (FSC) DESCRIPTION AND OPERATION 8-1-28

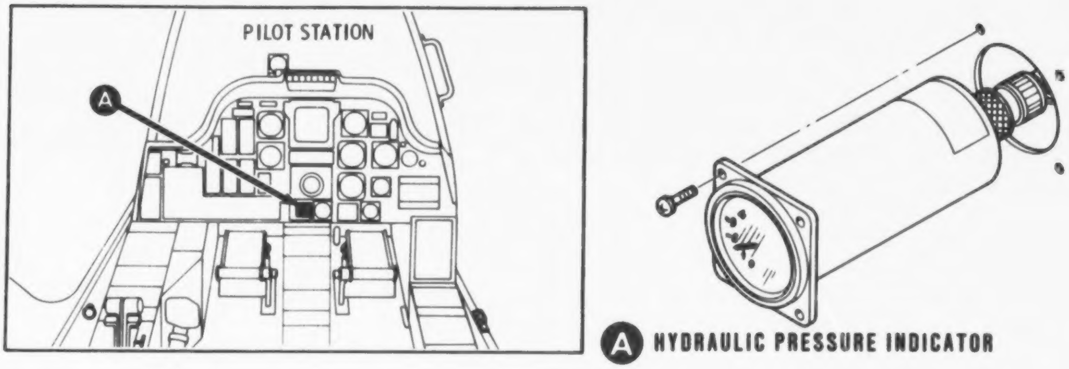
A. The FSC is in the left side of the aircraft nose (access door L40).

B. The FSC converts aft/forward fuel cell sensor inputs to linear 0-5 VDC voltages. The DC voltages represent the amount of fuel in the fuel cells.

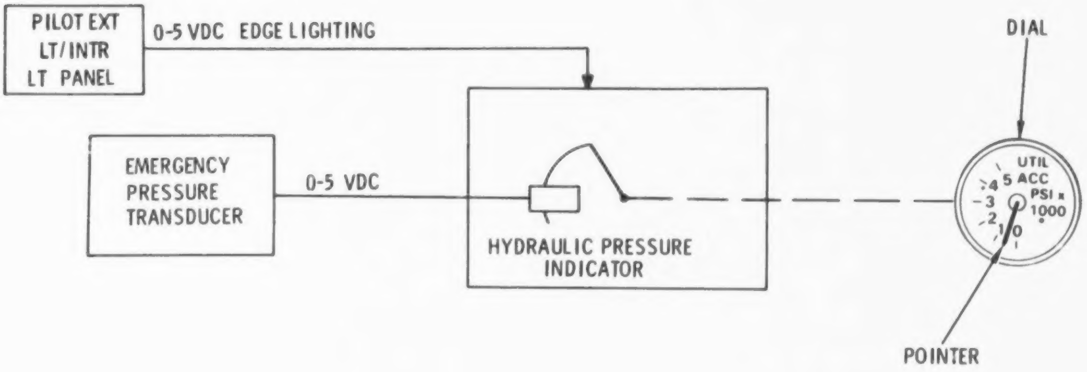
C. The FSC outputs the DC voltages to the pilot fuel quantity indicator except during refueling. The FSC outputs DC voltages to the refuel indicator on the fuselage during refueling.

D. The FSC operates on 28 VDC from the signal data converter (SDC) except during refueling. The FSC operates on 24 VDC from the battery during refueling.

8-1-29. HYDRAULIC PRESSURE INDICATOR DESCRIPTION AND OPERATION 8-1-29


PILOT STATION
A

Ⓐ HYDRAULIC PRESSURE INDICATOR


PILOT EXT LT/INTR LT PANEL
0-5 VDC EDGE LIGHTING
EMERGENCY PRESSURE TRANSDUCER
0-5 VDC
HYDRAULIC PRESSURE INDICATOR
DIAL
UTIL ACC PSI x 1000
0 1 2 3 4 5
POINTER

MM04-0600B

8-1-29. HYDRAULIC PRESSURE INDICATOR DESCRIPTION AND OPERATION (cont) 8-1-29

A. The hydraulic pressure indicator is on the pilot instrument panel.

B. The indicator displays hydraulic pressure from 0 to 4000 pounds per square inch.

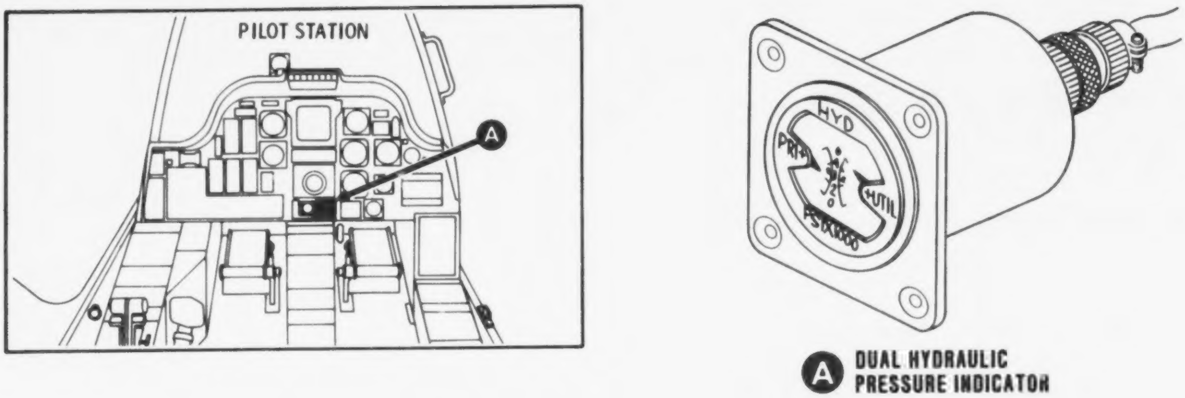
C. The indicator is edge-lighted.

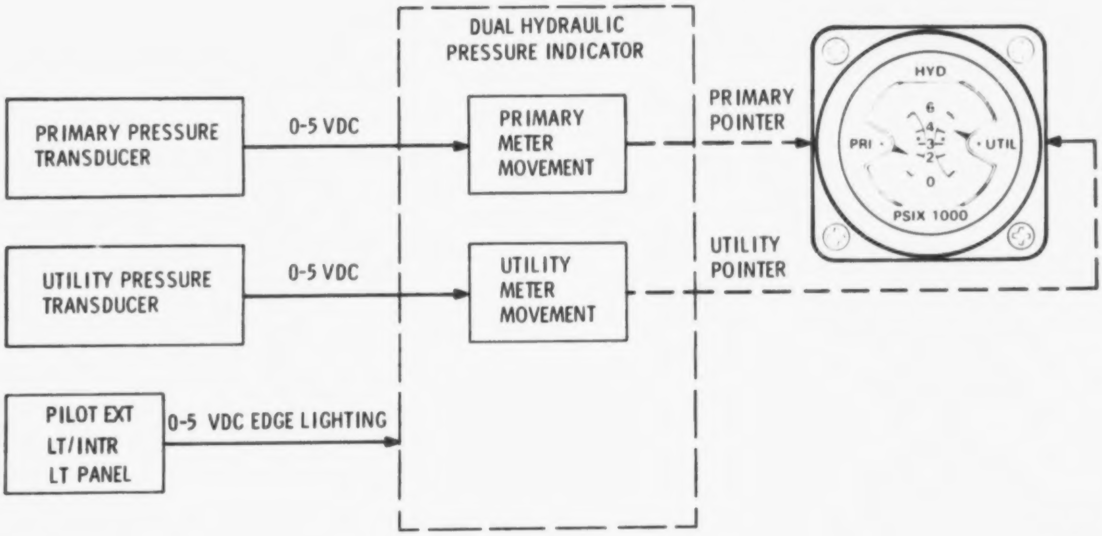
D. The dial shows hydraulic pressure in thousands of pounds per square inch.

E. The indicator operates as follows:

An emergency pressure transducer in the utility hydraulic system measures hydraulic pressure. The transducer converts the hydraulic pressure into a 0 to 5 VDC signal. Pointer movement changes with changes in hydraulic pressure.

8-1-30. DUAL HYDRAULIC PRESSURE INDICATOR DESCRIPTION AND OPERATION 8-1-30


PILOT STATION
A
HYD
PRI
UTIL
PSIX1000
A DUAL HYDRAULIC PRESSURE INDICATOR


DUAL HYDRAULIC PRESSURE INDICATOR
PRIMARY PRESSURE TRANSDUCER
0-5 VDC
PRIMARY METER MOVEMENT
PRIMARY POINTER
UTILITY PRESSURE TRANSDUCER
0-5 VDC
UTILITY METER MOVEMENT
UTILITY POINTER
PILOT EXT LT/INTR LT PANEL
0-5 VDC EDGE LIGHTING
HYD
6
4
3
2
0
PRI
UTIL
PSIX 1000

MM04-0601B

8-1-30. DUAL HYDRAULIC PRESSURE INDICATOR DESCRIPTION AND OPERATION (cont) 8-1-30

A. The dual hydraulic pressure indicator is on the pilot instrument panel.

B. The indicator displays primary and utility hydraulic pressure from 0 - 6000 pounds per square inch.

C. The indicator is edge-lighted.

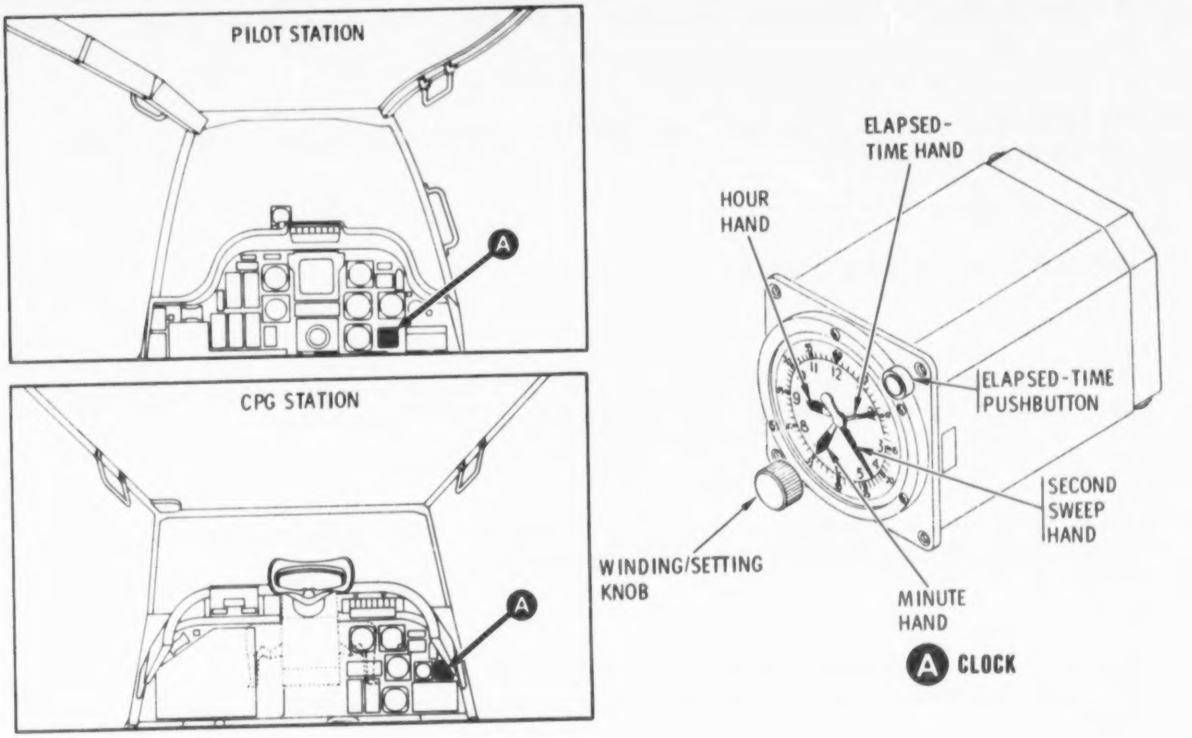
D. The indicator has a dual numbered, scaled dial with a pointer for each scale. Each pointer is connected to a meter movement.

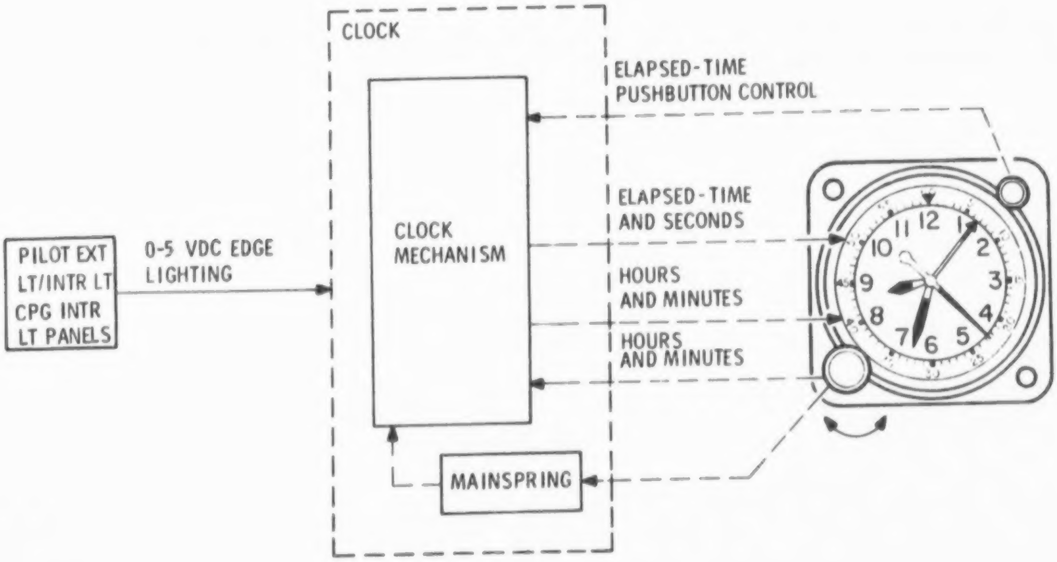
E. The dial scales are numbered 0, 2, 3, 4, and 6. Each number equals hydraulic pressure in thousands of pounds per square inch.

F. Two transducers measure hydraulic pressure in the primary and utility hydraulic pressure systems. The transducers convert hydraulic pressure into 0 to 5 VDC signals.

G. The DC signals move the pointers across the dial. Pointer movement changes with changes in hydraulic pressure.

8-1-31. PILOT AND COPILOT/GUNNER (CPG) CLOCK DESCRIPTION AND OPERATION 8-1-31


PILOT STATION
A
CPG STATION
A
ELAPSED-TIME HAND
HOUR HAND
ELAPSED-TIME PUSHBUTTON
SECOND SWEEP HAND
WINDING/SETTING KNOB
MINUTE HAND
A CLOCK


CLOCK
ELAPSED-TIME PUSHBUTTON CONTROL
CLOCK MECHANISM
ELAPSED-TIME AND SECONDS
HOURS AND MINUTES
HOURS AND MINUTES
PILOT EXT LT/INTR LT CPG INTR LT PANELS
0-5 VDC EDGE LIGHTING
MAINSPRING

MM04-0602B

8-1-31. PILOT AND COPILOT/GUNNER (CPG) CLOCK DESCRIPTION AND OPERATION 8-1-31

A. The clocks are on the pilot and CPG instrument panels.

B. The clocks show time of day in hours, minutes, and seconds. They also show elapsed time in minutes.

C. The clocks are edge-lighted.

D. The mainspring drives the clock mechanism which drives the clock hands and the elapsed time hand.

E. To wind the mainspring, the winding/setting knob is pushed in and turned. Pulled out, it is used to set the hour and minute hands.

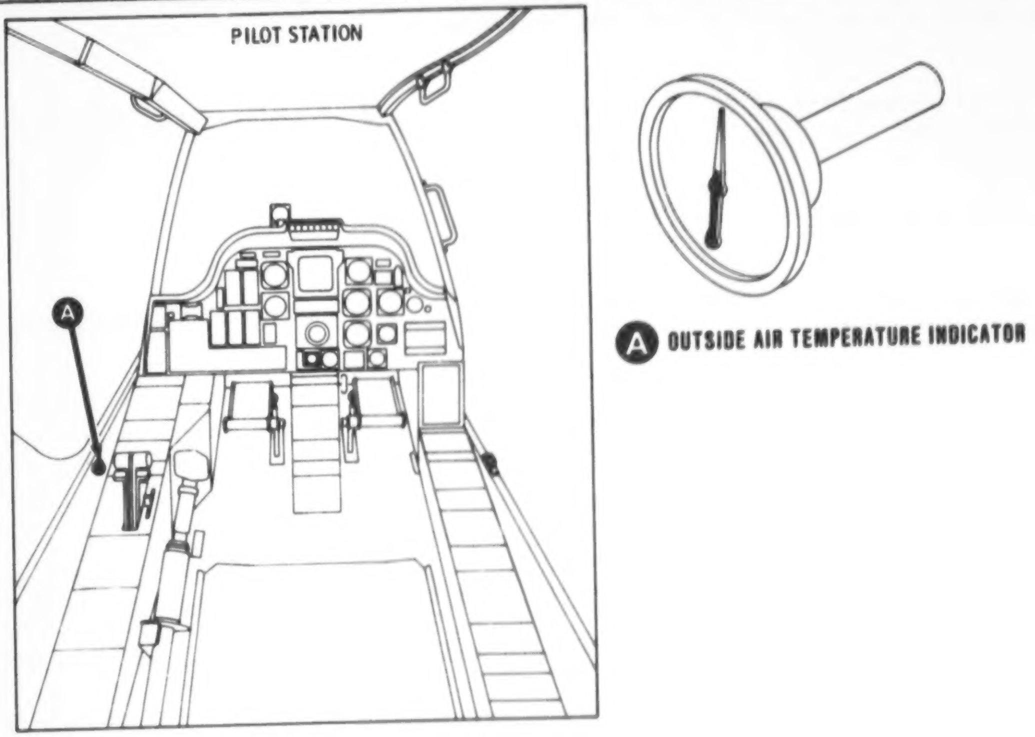
F. The elasped-time pushbutton control has a three-stage action:

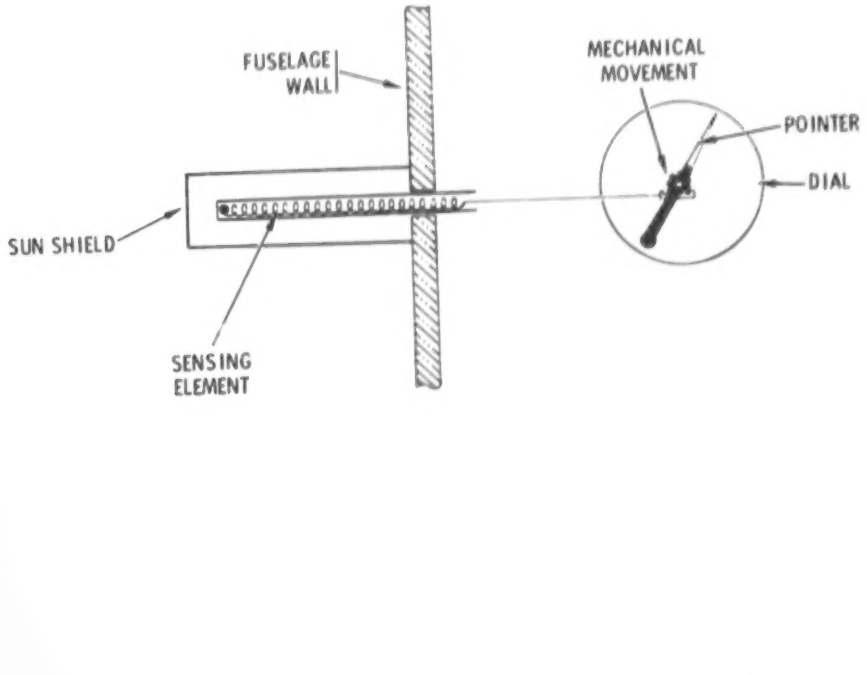
First push: the elapsed-time hand and second sweep hand go to zero

Second push: the sweep-second hand and elapsed-time hand start keeping time

Third push: the sweep-second hand and elapsed-time hand stop

8-1-32. OUTSIDE AIR TEMPERATURE INDICATOR DESCRIPTION AND OPERATION 8-1-32


PILOT STATION
A
A OUTSIDE AIR TEMPERATURE INDICATOR


FUSELAGE WALL
MECHANICAL MOVEMENT
POINTER
DIAL
SUN SHIELD
SENSING ELEMENT

MM04-0603A

8-1-32. OUTSIDE AIR TEMPERATURE INDICATOR DESCRIPTION AND OPERATION (cont) 8-1-32

A. The outside air temperature indicator is in the left side of the pilot station fuselage. The shielded sensing element extends through the fuselage to the outside air.

B. A luminous dial shows temperature in degrees Celsius (°C) above and below zero.

C. The sensing element winds or unwinds as outside air temperature changes. This motion is multiplied and applied to the pointer. The amount of pointer movement changes as outside air temperature changes.

SECTION II. ENGINE INSTRUMENTS MAINTENANCE

8-2-1. ENGINE INSTRUMENT INSPECTION

Personnel Required:

66R30 Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors, covers, panels, and fairings removed as necessary

---

1. Check engine instruments and instrument panel mounting areas for dents, nicks, and cracks.
2. Check front panels of instruments for dents, nicks, and cracks.
3. Check instruments and their front panels, covers, switches, pointers, and knobs for loose installation.
4. Check instruments for loose or missing hardware.
5. Check pointers on instrument faces for wear and damage.
6. Check instrument scales for wear, illegibility, distortion, and discoloration.
7. Check electrical connectors for loose installation. Inspect for loose or broken lockwiring.
8. Check instruments for fogging and moisture.
9. Secure opened doors, covers, panels and fairings.

END OF TASK

8-2-2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM) 8-2-2

This task covers: A. DISASSEMBLY B. CLEANING C. INSPECTION D. ASSEMBLY

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Wrench, Torque, 1/4 Drive	5120-00-117-4832
Bit, Screwdriver, Flat Tip	5120-00-293-2057
Bar, Shunt, 4-inch	1005-01-241-4925
Strap, Grounding, Large	4240-01-165-8865
Extractor, Circuit Card	5120-00-758-6653
Bit, Screwdriver, Cross Tip	5120-00-223-6871

Materials/Parts:

(E11)	Primer, Sealant
(E32)	Cloth, Lint-Free
(E46)	Compound, Sealing
(E93)	Compound, Sealing

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

NOTE

This procedure is generalized. Refer to tasks in this section to perform maintenance on a particular engine instrument.

GO TO NEXT PAGE

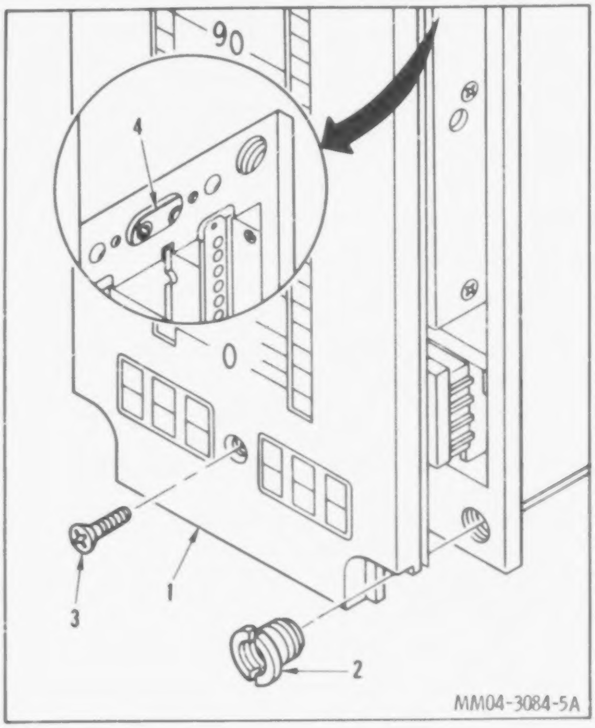
8-2-2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM) (cont)

CAUTION

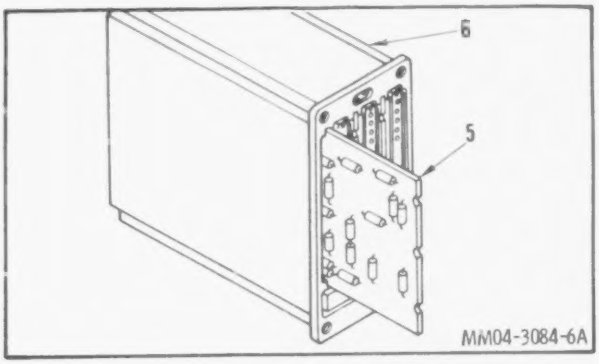
Static electrical discharge can damage semiconductors in the circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

A. DISASSEMBLY

1. **Remove front panel (1).** Wear grounding strap.
   a. Remove four bushings (2) and one screw (3).
   b. Carefully pull front panel (1) outward until light connector (4) detaches.



2. **Remove circuit cards (5) from indicator case (6).** Wear grounding strap. Use circuit card extractor.



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8-2-2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM) (cont) 8-2-2

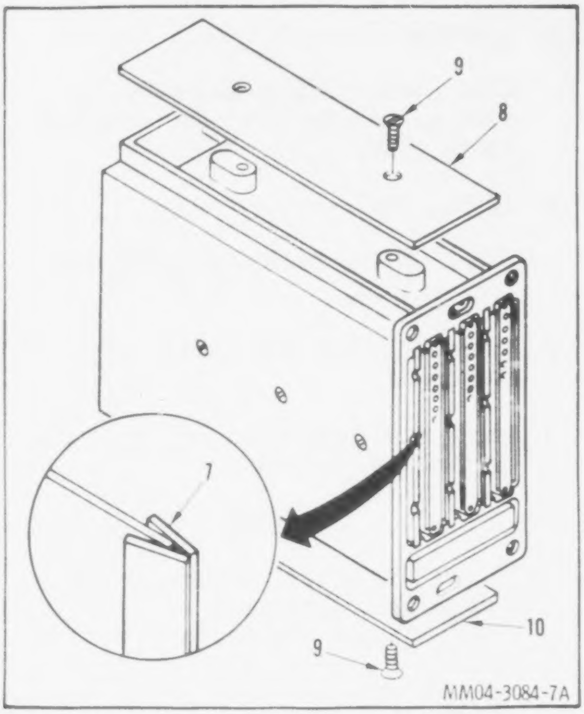
NOTE

Step 3 is necessary for removal of rpm interface/interface voltmeter/oil pressure excitation circuit card.

3. **Install shunt bar (7).**

4. **Remove top cover (8).** Remove two screws (9).

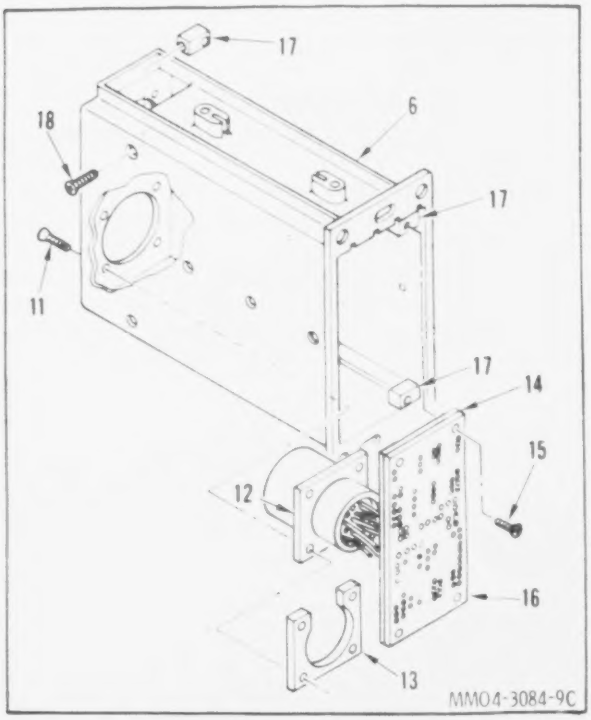
5. **Remove bottom cover (10).** Remove two screws (9).



6. **Remove four screws (11) that hold connector (12) and nut plate (13).**

7. **Remove motherboard wiring subassembly (14).**
   a. Remove four screws (15) that hold motherboard (16) and motherboard wiring subassembly (14) to four mounting blocks (17).
   b. Slide subassembly (14) and motherboard (16) out through front of indicator case (6).

8. **Remove four blocks (17).** Remove four screws (18).



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8-2-2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM) (cont)

B. CLEANING

Wipe circuit cards and circuit card guide with a clean lint-free cloth (E32).

C. INSPECTION

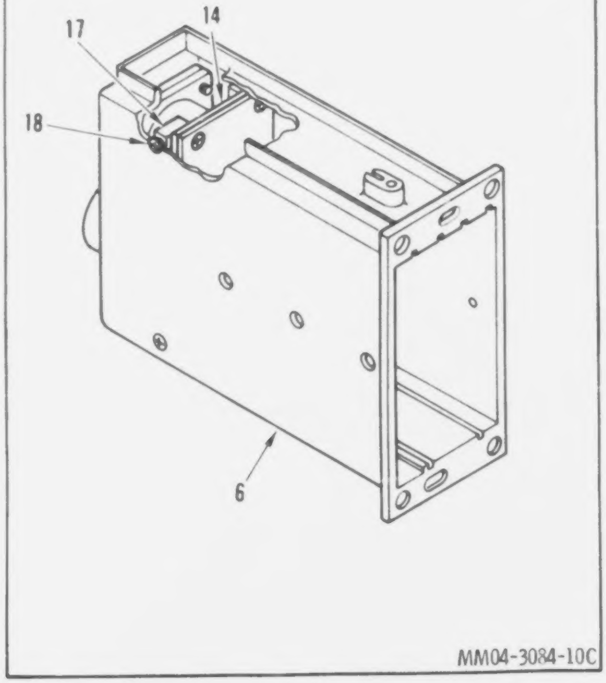
1. Check engine indicator for cracks. None allowed.
2. Inspect engine indicator for nicks and dents.
3. Check indicator case for stripped or damaged threads.

CAUTION

Static electrical discharge can damage semiconductors in the circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

D. ASSEMBLY

1. Install four blocks (18). Torque four screws (19) to 2 INCH-POUNDS.
   - a. Aline four blocks (18) with four screw holes inside case (6).
   - b. Secure four blocks (18) with four screws (19). Torque four screws (19) to 2 INCH-POUNDS.



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8-2-2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM) (cont)

2. **Install wiring subassembly (14) and motherboard (16).** Torque four screws (15) and four screws (11) to **2 INCH-POUNDS.**

   a. Place plate (13) over wiring near connector (12).

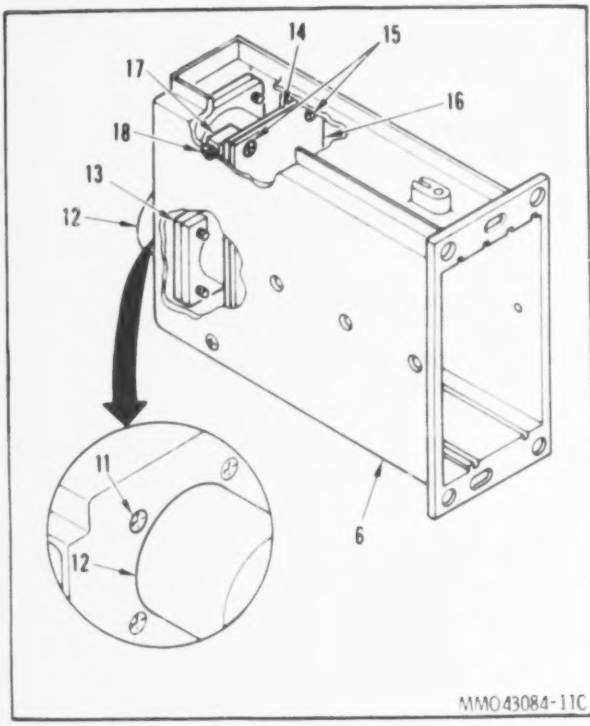
   b. Slide subassembly (14) and motherboard (16) into case (6), position against four blocks (17).

   c. Aline connector (12) and plate (13) with screw holes in case (6).

   d. Secure connector (12) with four screws (11).

   e. Secure subassembly (14) and motherboard (16) to four blocks (17) with four screws (15). Use sealant primer (E11) and sealing compound (E46).

   f. Torque four screws (15) and screws (11) to **2 INCH-POUNDS.** Use crosstip screwdriver bit.



3. **Inspect (TI).**

GO TO NEXT PAGE

8-2-2. TYPICAL ENGINE INSTRUMENT INDICATOR DISASSEMBLY/ASSEMBLY (AVIM) (cont) 8-2-2

4. **Install bottom cover (10).**
   Install two screws (9).

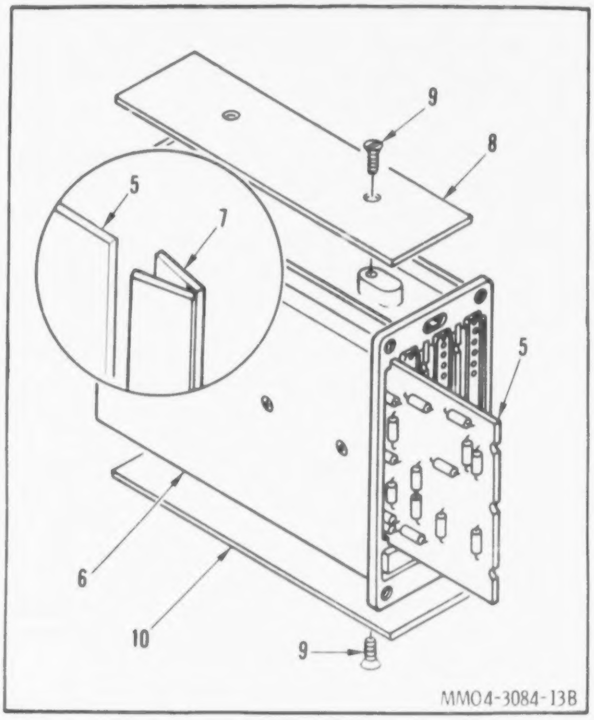
5. **Install top cover (8).**
   Install two screws (9).

6. **Install circuit cards (5) in case (6).**

   a. Remove shuntbar (7), if installed.

   b. Insert circuit cards (5) into case (6).

   c. Press circuit cards (5) until fully seated.



7. **Install front panel (1).** Torque four bushings (2) to **1.5 INCH-POUNDS.** Torque screw (3) to **1.5 INCH-POUNDS.**

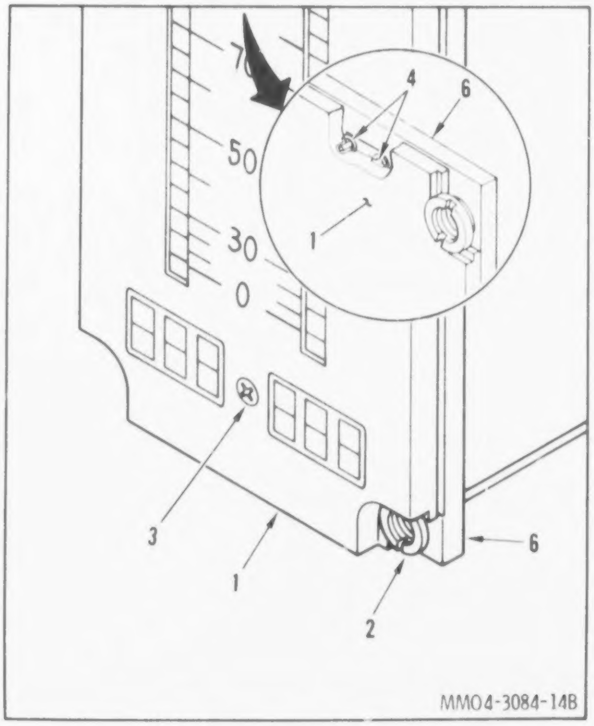
   a. Coat four bushings (2) with primer and sealing compound. Use primer (E11) and sealing compound (E93).

   b. Position panel (1) on case (6), aligning connector (4). Press to engage connector.

   c. Install four bushings (2). Torque bushings to **1.5 INCH-POUNDS.** Use flat tip screwdriver bit.

   d. Install screw (3). Torque screw to **1.5 INCH-POUNDS.** Use crosstip screwdriver bit.

8. **Inspect (TI).**



END OF TASK

8-2-3. PILOT/CPG ENGINE TORQUE INDICATOR REMOVAL/INSTALLATION 8-2-3

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

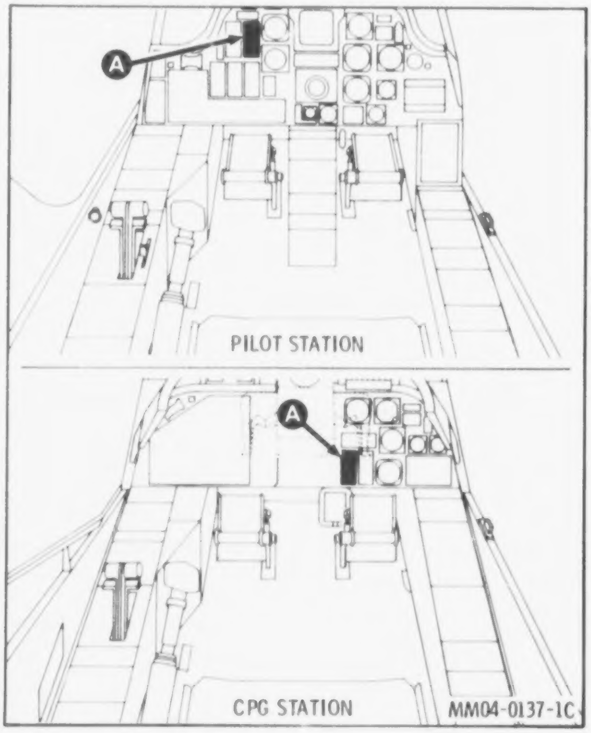
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot/CPG station (para 1-7-1). Observe all safety precautions.
2. Open ENG INST circuit breakers on pilot center circuit breaker panel and CPG left console circuit breaker panel No. 1.



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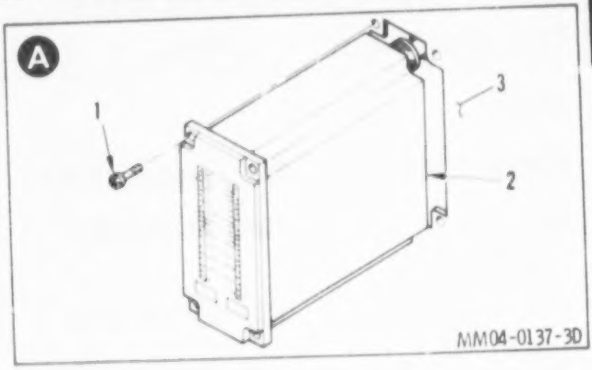
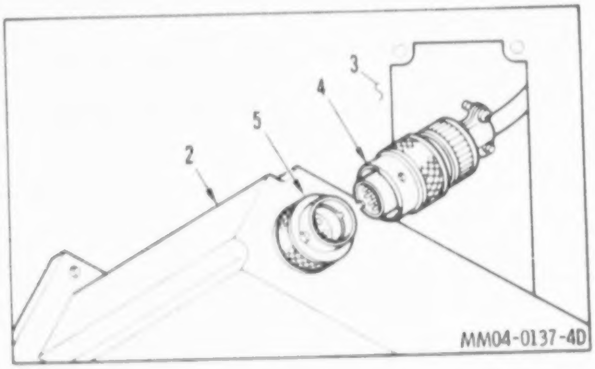
8-2-3. PILOT/CPG ENGINE TORQUE INDICATOR REMOVAL/INSTALLATION (cont)

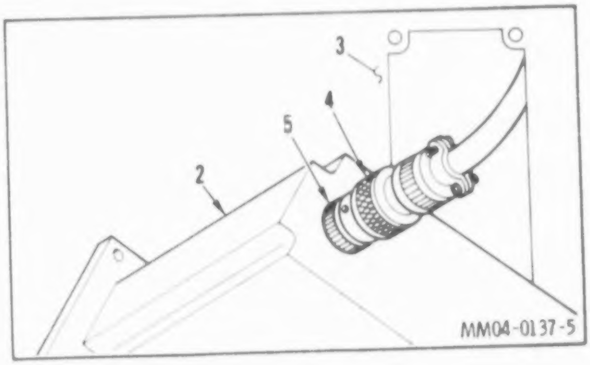
3. Remove four screws (1).

4. Lift engine torque indicator (2) clear of instrument panel (3).

5. Detach connector P66 (pilot) or P74 (CPG) (4) from connector M2J1 (pilot) or M8J1 (CPG) (5).







B. CLEANING

Wipe mounting area and indicator with a clean rag.

C. INSPECTION

1. Check engine torque indicator and instrument panel mounting area for dents, nicks, cracks (para 8-2-1).

2. Check indicator and instrument panel screw holes for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.

D. INSTALLATION

1. Attach connector P66 (pilot) or P74 (CPG) (4) to connector M2J1 (pilot) or M8J1 (CPG) (5) on indicator (2).

2. Aline indicator (2) with screw holes in panel (3).

3. Install four screws (1).

4. Inspect (TI).

5. Perform engine instrument operational check (TM 55-1520-238-T).

END OF TASK

8-2-4. PILOT/CPG ENGINE TORQUE INDICATOR FRONT PANEL REMOVAL/INSTALLATION (AVIM) 8-2-4

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Bit, Screwdriver, Crosstip	5120-00-223-6971
Wrench, Torque 1/4 Drive	5120-00-117-4832
Bit, Screwdriver, Flat Tip	5120-00-293-2057
Strap, Grounding, Large	4240-00-165-8865

Materials/Parts:

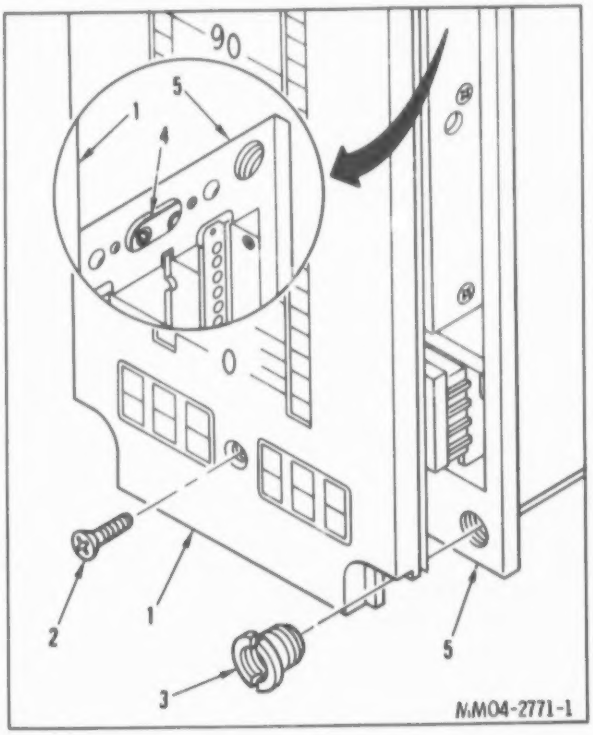
(E11) Primer, Sealant
(E93) Compound, Sealing

Personnel Required:

68F10 Aircraft Electrician
66P10 Inspector/Supervisor

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.



MM04-2771-1

A. REMOVAL

1. **Remove front panel (1). Wear grounding strap.**

   a. Remove screw (2) and four bushings (3).

   b. Pull panel (1) from lighting connector (4) and indicator case (5).

B. CLEANING

1. **Wipe mounting area and indicator with a clean rag.**

GO TO NEXT PAGE

8-2-4. PILOT/CPG ENGINE TORQUE INDICATOR FRONT PANEL REMOVAL/INSTALLATION (AVIM) (cont)

C. INSPECTION

1. Check front panel for cracks.
   None allowed.

2. Check front panel for dents and nicks (para 8-2-1).

3. Check indicator case for stripped or damaged threads (para 8-2-1).

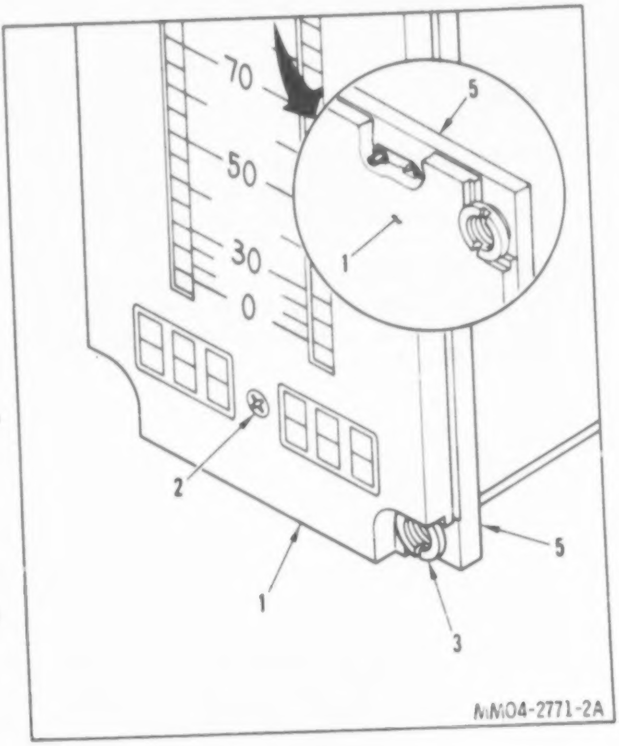
D. INSTALLATION

CAUTION

Do not exceed torque of 1.5 INCH-POUNDS in step 1.

1. Install front panel (1). Torque four bushings (3) to 1.5 INCH-POUNDS. Torque screw (2) to 1.5 INCH POUNDS.
   a. Apply primer (E11) and sealing compound (E93) to four bushings (3).
   b. Position panel (1) on case (5) and install four bushings (3). Torque four bushings to 1.5 INCH-POUNDS. Use flat tip screwdriver bit.
   c. Install screw (2). Torque screw to 1.5 INCH-POUNDS. Use crosstip screwdriver bit.

2. Inspect (TI).



END OF TASK

8-2-5. PILOT/CPG ENGINE/ROTOR RPM INDICATOR REMOVAL/INSTALLATION 8-2-5

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T

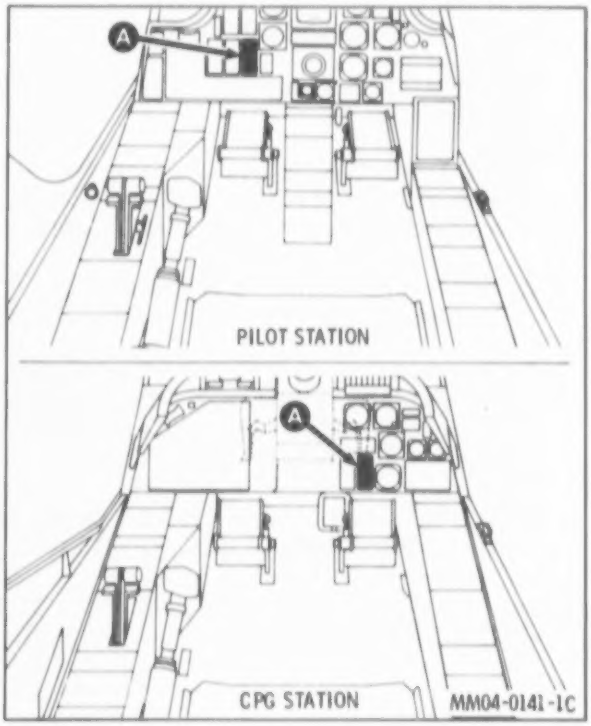
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot/CPG station (para 1-7-1). Observe all safety precautions.

2. Open ENG INST circuit breakers on pilot center circuit breaker panel and CPG left console circuit breaker panel No. 1.



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8-2-5. PILOT/CPG ENGINE/ROTOR RPM INDICATOR REMOVAL/INSTALLATION 8-2-5

3. Remove four screws (1).

4. Lift engine rotor rpm indicator (2) from instrument panel (3).

5. Detach connector P65 (pilot) or P73 (CPG) (4) from connector M1J2 (pilot) or M7J1 (CPG) (5).

B. CLEANING

Wipe mounting area and indicator with a clean rag.

C. INSPECTION

1. Check engine/rotor rpm indicator and instrument panel mounting area for cracks. None allowed.

2. Check indicator and instrument panel mounting area for nicks and dents (para 8-2-1).

3. Check indicator and instrument panel screw holes for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.

D. INSTALLATION

1. Attach connector P65 (pilot) or P73 (CPG) (4) to engine/rotor rpm indicator connector M1J2 (pilot) or M7J1 (CPG) (5).

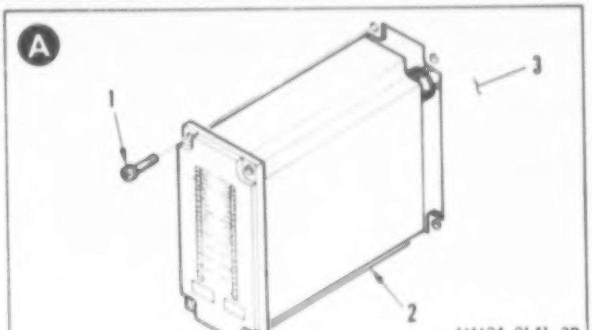
2. Aline indicator (2) with screw holes in panel (3).

3. Install four screws (1).

4. Inspect (TI).

5. Perform engine instrument operational check (TM 55-1520-238-T).

END OF TASK



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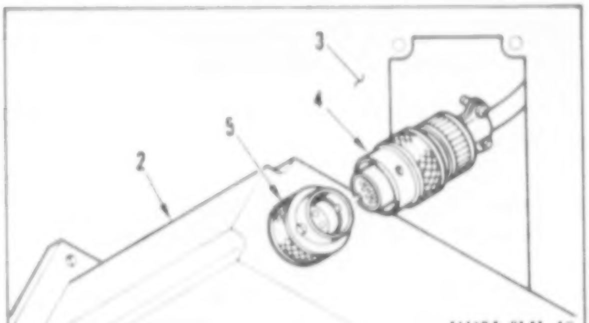
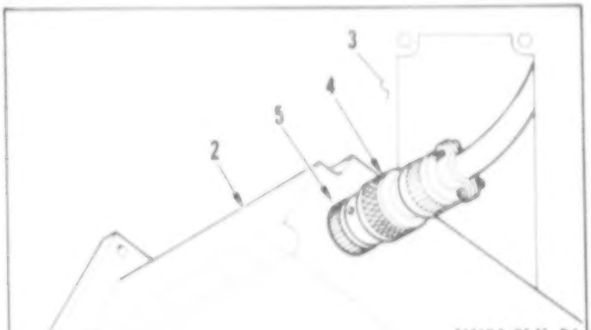
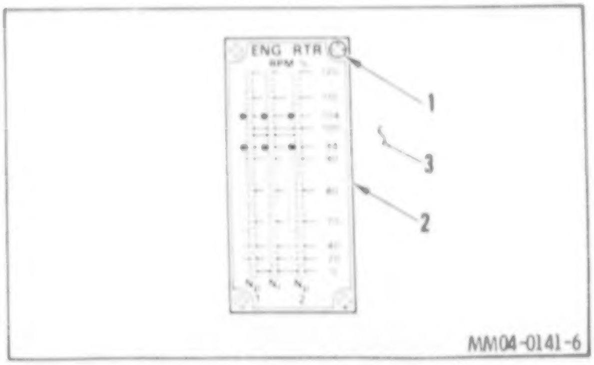


MM04-0141-4C



MM04-0141-5A



MM04-0141-6

8-2-6. PILOT ENGINE TURBINE GAS TEMPERATURE (TGT) INDICATOR AND ENGINE GAS GENERATOR N_G RPM INDICATOR REMOVAL/INSTALLATION 8-2-6

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

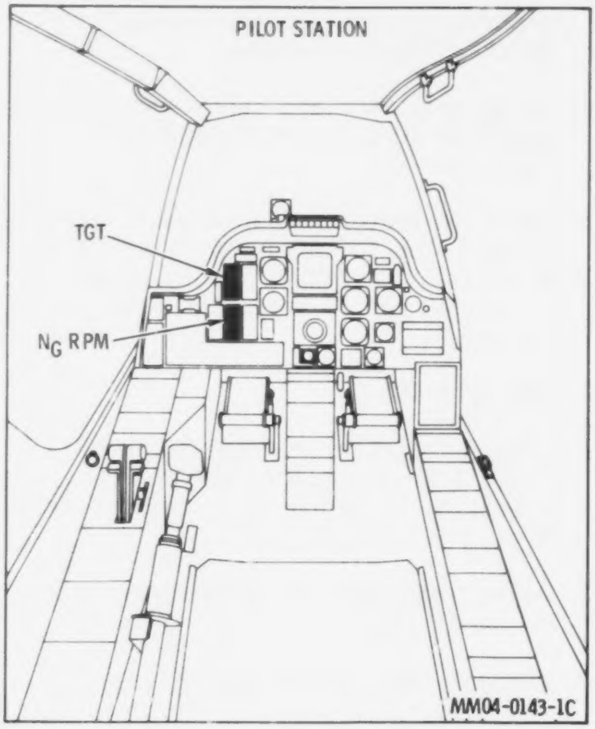
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.
2. Open ENG INST circuit breaker on pilot center circuit breaker panel.



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8-2-6. PILOT ENGINE TURBINE GAS TEMPERATURE (TGT) INDICATOR AND ENGINE GAS GENERATOR N_G RPM INDICATOR REMOVAL/INSTALLATION (cont) 8-2-6

3. Remove four screws (1).
4. Lift indicator (2) from instrument panel (3).
5. Detach connector P68 (TGT indicator)/P67 (N_G rpm indicator) (4) from connector M4J1 (TGT indicator)/M3J1 (N_G rpm indicator) (5).

B. CLEANING

Wipe mounting area and indicator with a clean rag.

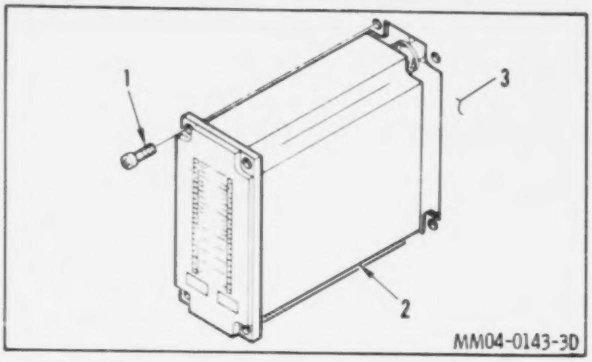
C. INSPECTION

1. Check indicator for cracks. None allowed.
2. Check indicator for dents and nicks (para 8-2-1).
3. Check indicator and instrument panel screw holes for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.

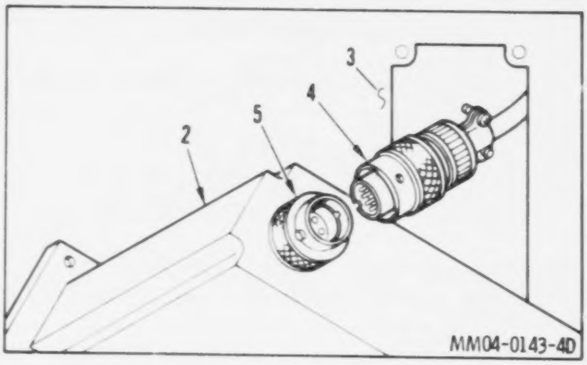
D. INSTALLATION

1. Attach connector P68 (TGT indicator)/P67 (N_G rpm indicator) (4) to connector M4J1 (TGT indicator)/M3J1 (N_G rpm indicator) (5).
2. Aline indicator (2) with screw holes in panel (3).
3. Install four screws (1).
4. Inspect (TI).
5. Perform engine instruments operational check (TM 55-1520-238-T).

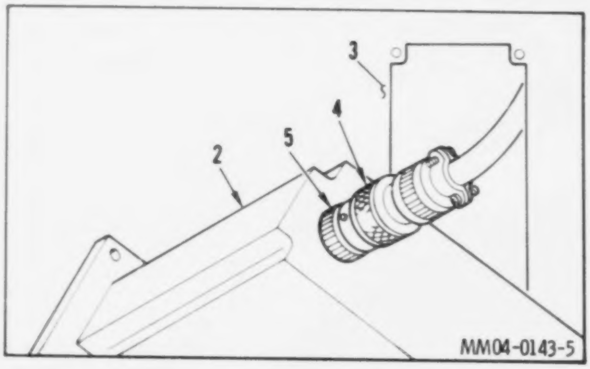
END OF TASK



MM04-0143-3D



MM04-0143-4D



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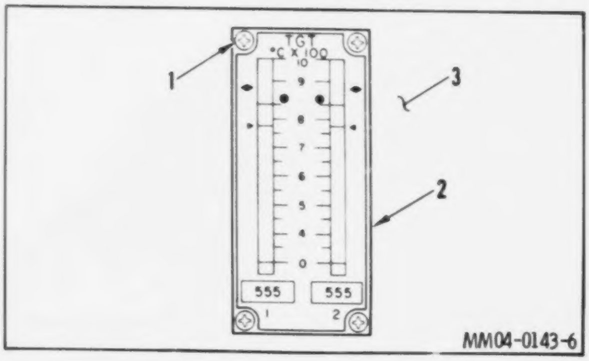

MM04-0143-6

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8-2-7. ENGINE OIL PRESSURE INDICATOR REMOVAL/INSTALLATION 8-2-7

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

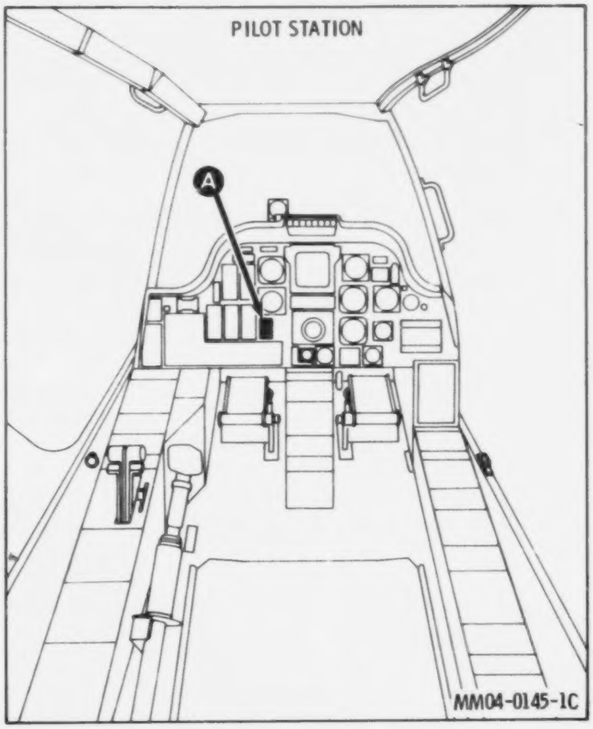
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.
2. Open ENG INST circuit breaker on pilot center circuit breaker panel.



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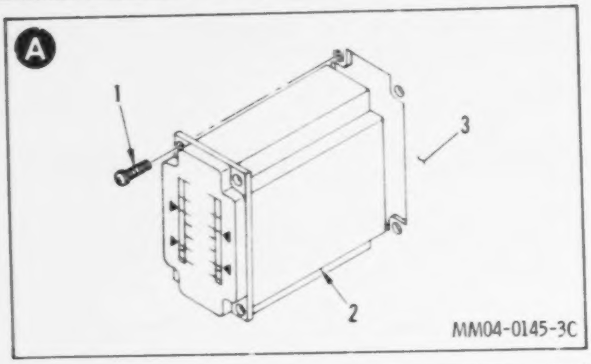
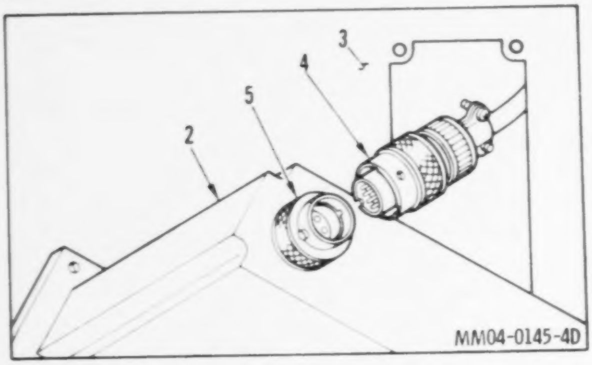
8-2-7. ENGINE OIL PRESSURE INDICATOR REMOVAL/INSTALLATION (cont) 8-2-7

3. Remove four screws (1).

4. Lift engine oil pressure indicator (2) clear of instrument panel (3).

5. Detach connector P70 (4) from oil pressure indicator connector M6J1 (5).





B. CLEANING

Wipe mounting area and indicator with clean rag.

C. INSPECTION

1. Check indicator for cracks. None allowed.

2. Check indicator for dents and nicks (para 8-2-1).

3. Check indicator and instrument panel screw holes for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.

D. INSTALLATION

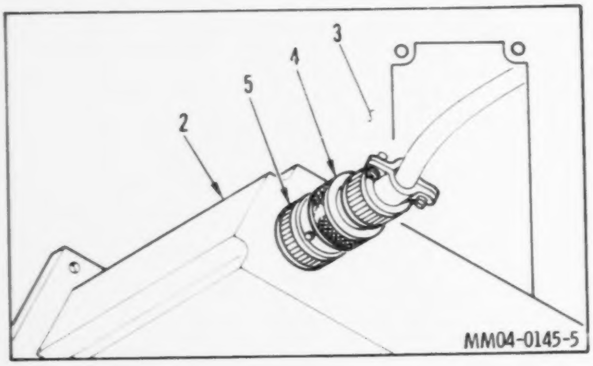
1. Attach connector P70 (4) to oil pressure indicator connector M6J1 (5).

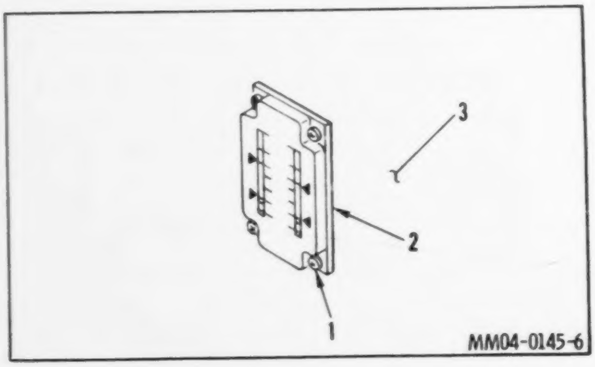
2. Aline indicator (2) with screw holes in panel (3).

3. Install four screws (1).

4. Inspect (TI).

5. Perform engine instrument operational check (TM 55-1520-238-T).





END OF TASK

8-2-8. SELECTABLE DIGITAL DISPLAY (SDD) PANEL REMOVAL/INSTALLATION 8-2-8

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

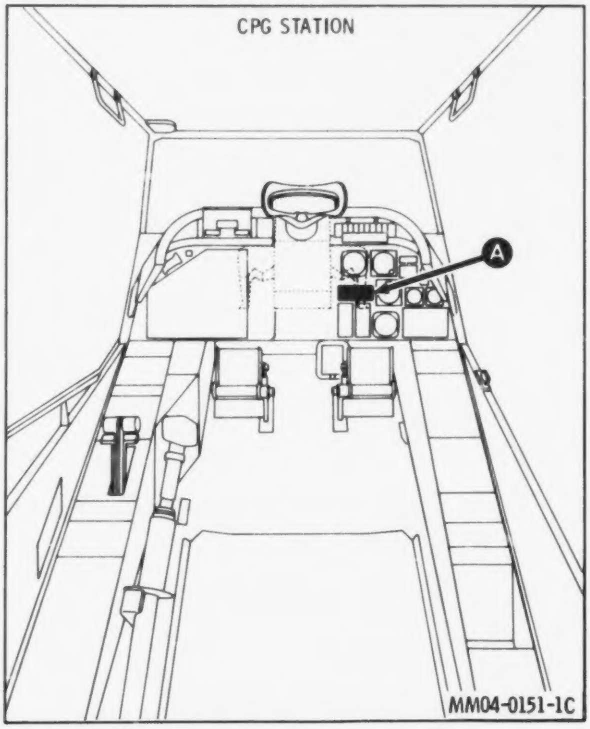
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. **REMOVAL**

1. **Enter CPG station** (para 1-7-1). **Observe all safety precautions.**



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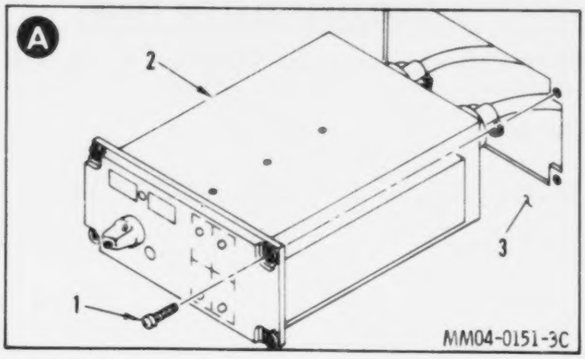
8-2-8. SELECTABLE DIGITAL DISPLAY (SDD) PANEL REMOVAL/INSTALLATION (cont) 8-2-8

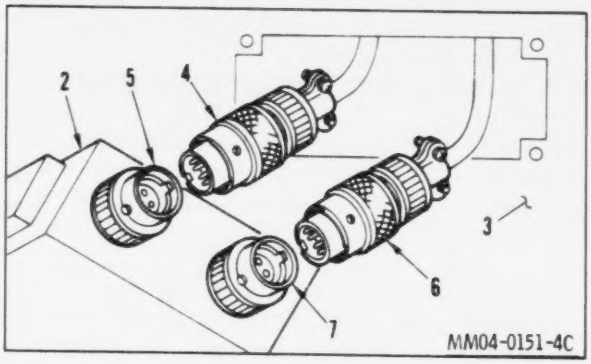
2. Remove four screws (1).

3. Lift SDD (2) clear of instrument panel (3).

4. Detach connector P279 (4) from connector A156J1 (5).

5. Detach connector P280 (6) from connector A156J2 (7).


A
2
3
1
MM04-0151-3C


2
5
4
3
6
7
MM04-0151-4C

B. CLEANING

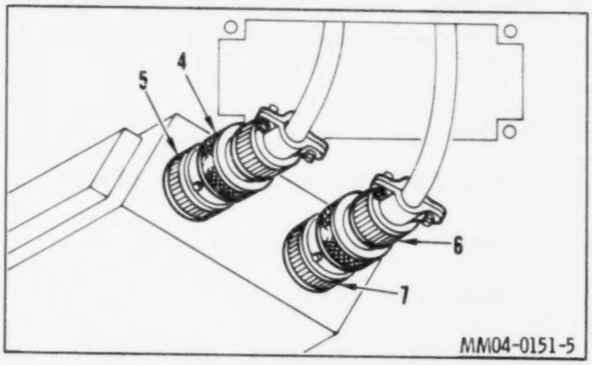
Wipe mounting area and SDD with a clean rag.

C. INSPECTION

1. Check SDD for cracks. None allowed.

2. Check SDD panel for nicks and dents (para 8-2-1).

3. Check SDD panel and instrument panel screw holes for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.


5
4
6
7
MM04-0151-5

D. INSTALLATION

1. Attach connector P279 (4) to connector A156J1 (5).

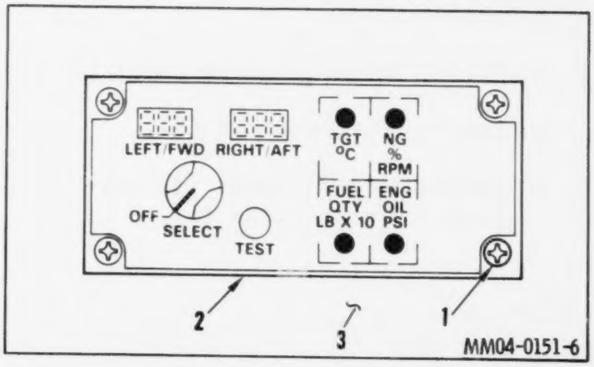
2. Attach connector P280 (6) to connector A156J2 (7).

3. Aline SDD (2) with screw holes in panel (3).

4. Install four screws (1).

5. Inspect (TI).

6. Perform engine instrument operational check (TM 55-1520-238-T).


LEFT/FWD
RIGHT/AFT
TGT °C
NG % RPM
FUEL QTY LB X 10
ENG OIL PSI
OFF
SELECT
TEST
2
3
1
MM04-0151-6

END OF TASK

8-2-9. SELECTABLE DIGITAL DISPLAY (SDD) PANEL FRONT PANEL REMOVAL/INSTALLATION (AVIM) 8-2-9

This task covers: A. REMOVAL B. REPAIR C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Bit, Screwdriver, Crosstip	5120-00-223-6971
Wrench, Torque, 1/4 Drive	5120-00-117-4832
Bit, Screwdriver, Flat Tip	5120-00-293-2057
Strap, Grounding, Large	4240-01-165-8865

Materials/Parts:

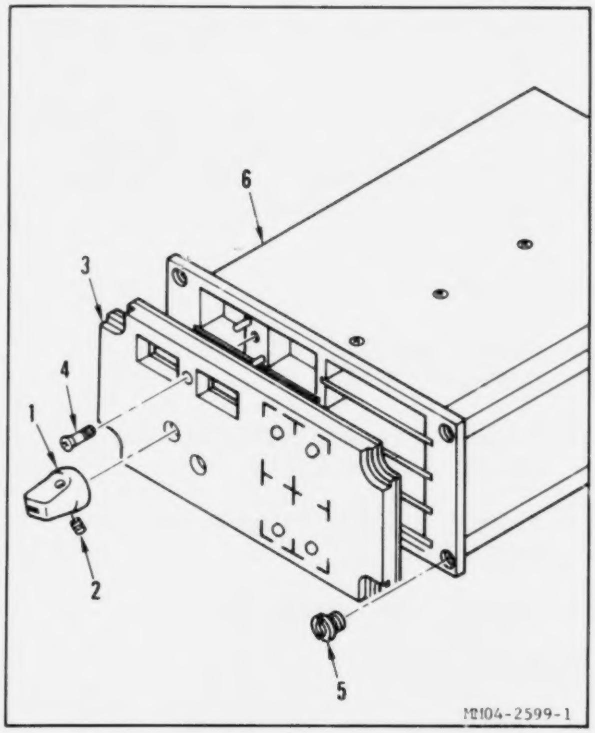
(E11)	Primer, Sealant
(E93)	Compound, Sealing

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.



A. REMOVAL

1. **Remove function select knob (1).**

   a. Remove two setscrews (2).

   b. Remove knob (1).

2. **Remove SDD front panel (3). Wear grounding strap.**

   a. Remove screw (4) from panel (3).

   b. Remove four bushings (5).

   c. Carefully pull panel (3) away from indicator case (6).

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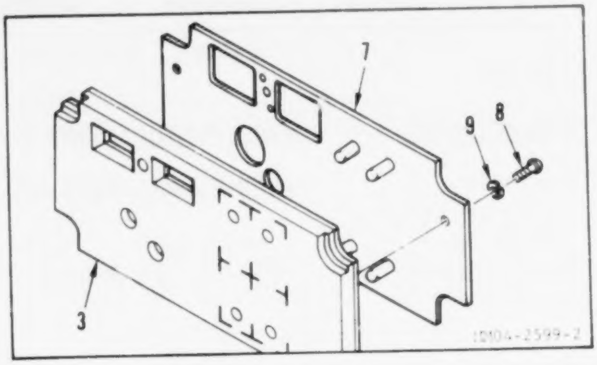
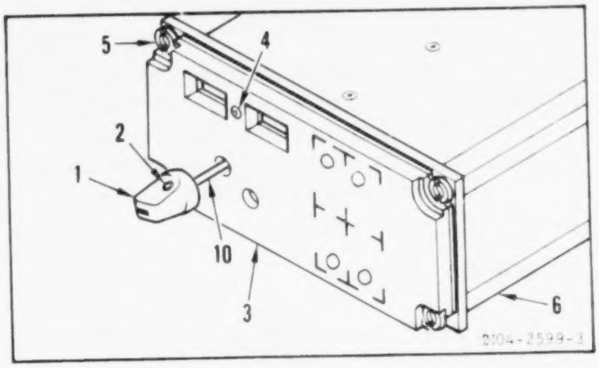
8-2-9. SELECTABLE DIGITAL DISPLAY (SDD) PANEL FRONT PANEL REMOVAL/INSTALLATION (AVIM) (cont)





B. REPAIR

1. **Repair panel (3) by replacing illuminated panel (7).**

   a. Remove two screws (8) and two lock washers (9).

   b. Remove panel (7) from panel (3).

   c. Aline serviceable panel (7) on panel (3).

   d. Install two lock washers (9) and two screws (8).

2. **Inspect (TI).**

C. INSTALLATION

1. **Install panel (3) on case (6).** Torque four bushings (5) to **1.5 INCH-POUNDS.** Torque screw (4) to **1.5 INCH-POUNDS.**

   a. Coat four bushings (5) with primer and sealing compound. Use primer (E11) and sealing compound (E93).

   b. Aline panel (3) on case (6). Install four bushings (5). Torque four bushings (5) to **1.5 INCH-POUNDS.** Use flat tip screwdriver bit.

   c. Install screw (4). Torque screw (4) to **1.5 INCH-POUNDS.** Use crosstip screwdriver bit.

2. **Install function select knob (1).**

   a. Position knob (1) on shaft of function select switch (10).

   b. Set switch (10) to **OFF.**

   c. Install two setscrews (2).

3. **Inspect (TI).**

END OF TASK

8-2-10. SELECTABLE DIGITAL DISPLAY (SDD) PANEL SWITCH MODULE REPLACEMENT (AVIM) 8-2-10

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Strap, Grounding, Large	4240-01-165-8865

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
8-2-9	SDD front panel removed

CAUTION

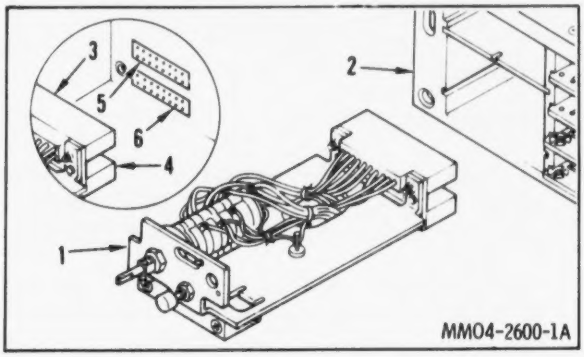
Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

A. REMOVAL

1. **Remove SDD switch module (1) from indicator case (2) by carefully pulling module (1) forward to free connectors P1 (3) and P2 (4) from connectors J6 (5) and J7 (6). Wear grounding strap.**

B. INSTALLATION

1. **Install serviceable module (1) into case (2) as far as it will go.** This attaches connectors P1 (3) and P2 (4) into connectors J6 (5) and J7 (6).
2. **Install SDD front panel** (para 8-2-9).
3. **Inspect (TI).**



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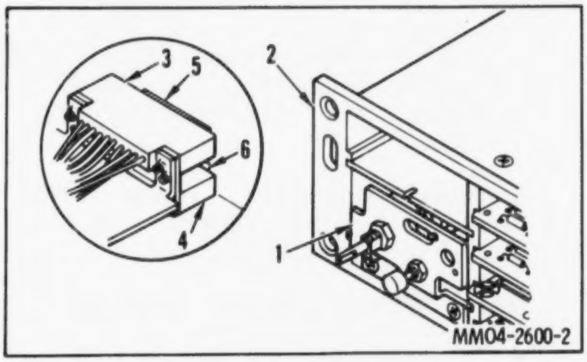


MM04-2600-2

END OF TASK

8-2-11. SELECTABLE DIGITAL DISPLAY (SDD) PANEL CASE REPLACEMENT (AVIM) 8-2-11

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Wrench, Torque, 1/4 Drive	5120-00-117-4832
Bit, Screwdriver, Crosstip	5120-00-223-6971
Strap, Grounding, Large	4240-01-165-8865

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

Equipment Conditions:

Ref	Condition
8-2-9	SDD front panel removed
8-2-10	SDD panel switch module removed
8-2-28	SDD panel circuit cards removed

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

A. REMOVAL

1. **Remove side covers (1) and (2).**

   a. Remove two screws (3) and cover (1).

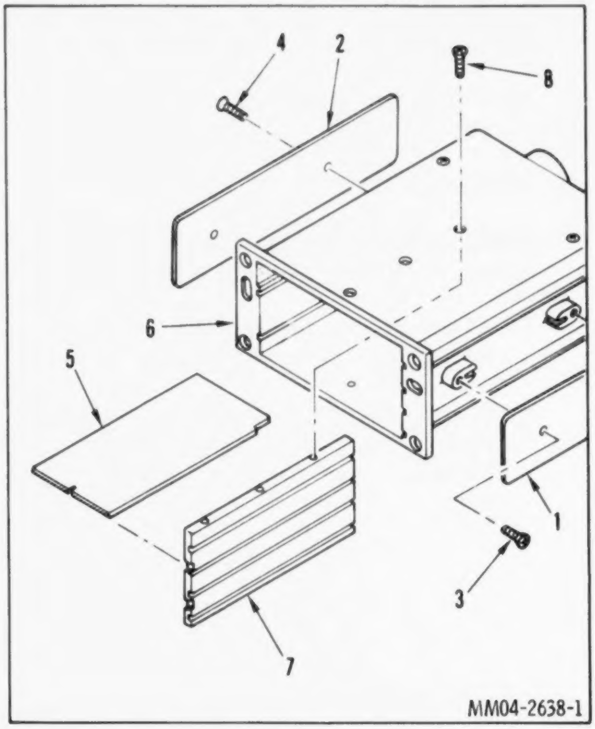
   b. Remove two screws (4) and cover (2).

2. **Lift partition (5) from SDD case (6).**

3. **Remove circuit card guide (7).**

   a. Remove six screws (8).

   b. Lift guide (7) from case (6).



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8-2-11. SELECTABLE DIGITAL DISPLAY (SDD) PANEL CASE REPLACEMENT (AVIM) (cont) 8-2-11

4. **Remove eight screws (9) that release connectors (10) and (11) and two nut plates (12).**

5. **Remove motherboard wiring subassembly (13).**

   a. Remove four screws (14) that release motherboard wiring subassembly (13) from four motherboard mounting blocks (15).

   b. Slide subassembly (13) out through front of SDD case (6).

6. **Remove four blocks (15).**

   a. Remove four screws (17) securing four blocks (15) to case (6).

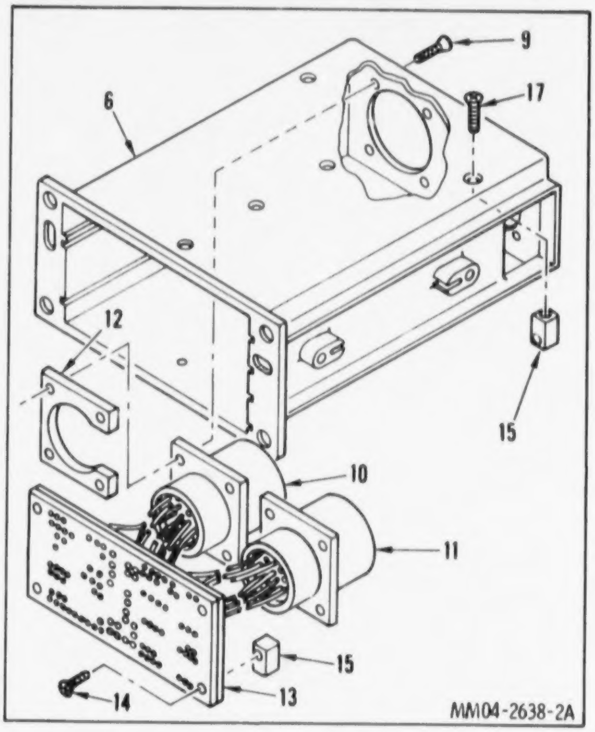
   b. Lift four blocks (15) out through rear of case (6).

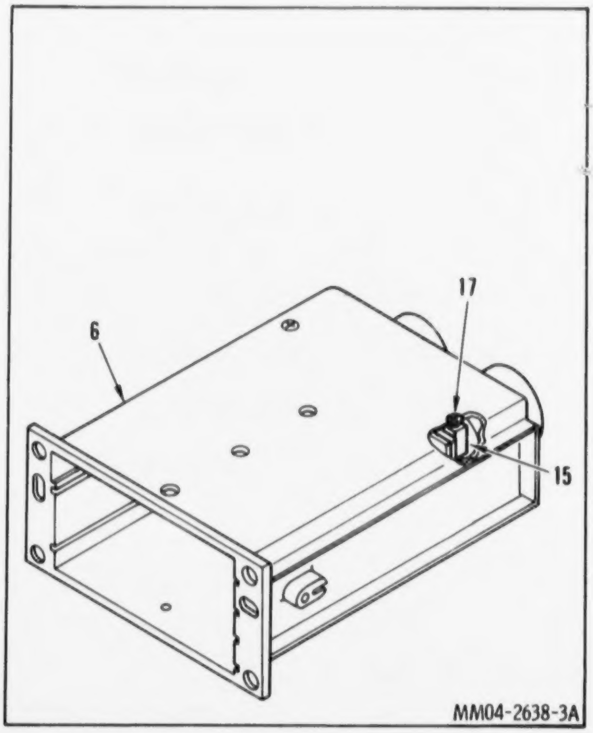
B. **INSTALLATION**

1. **Install four blocks (15). Torque screw (17) to 1.5 INCH-POUNDS.**

   a. Aline four blocks (15) with screw holes inside rear of case (6).

   b. Secure four blocks (15). Torque four screws (17) to **1.5 INCH-POUNDS.** Use crosstip screwdriver bit.





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8-2-11. SELECTABLE DIGITAL DISPLAY (SDD) PANEL CASE REPLACEMENT (AVIM) (cont)

2. **Install motherboard wiring subassembly (13) and motherboard (16).** Torque eight screws (9) to **2 INCH-POUNDS.**

   a. Place two nutplates (12) over wiring near connectors (10) and (11).

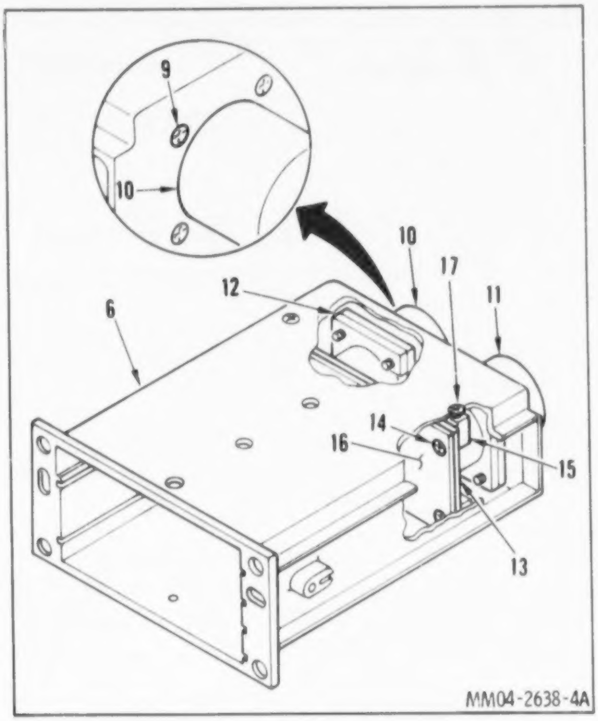
   b. Slide motherboard (16) into case (6), position against four blocks (15).

   c. Aline connectors (10) and (11) and two nutplates (12) with screw holes in case (6).

   d. Secure connectors (10) and (11) with eight screws (9). Torque eight screws (9) to **2 INCH-POUNDS.** Use crosstip screwdriver bit.

   e. Secure motherboard (16) and subassembly (13) to four mounting blocks (15) with four screws (14). Use primer (E11) and sealing compound (E46).

   f. Torque four screws (14) to **2 INCH-POUNDS.** Use crosstip screwdriver bit.



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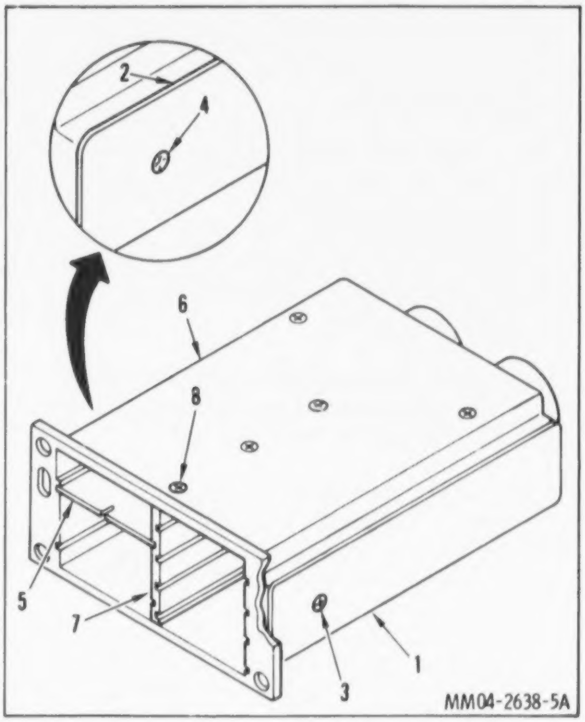
8-2-11. SELECTABLE DIGITAL DISPLAY (SDD) PANEL CASE REPLACEMENT (AVIM) (cont) 8-2-11



3. **Install circuit card guide (7).** Torque six screws (8) to **2 INCH-POUNDS.**

   a. Position guide (7) in case (6).

   b. Secure with six screws (8). Torque six screws (8) to **2 INCH-POUNDS.** Use crosstip screwdriver bit.

4. **Install partition (5) in SDD case (6).**

5. **Install side covers (1) and (2).** Torque two screws (4) and two screws (3) to **2 INCH-POUNDS.**

   a. Install cover (2) with two screws (4). Torque two screws (4) to **2 INCH-POUNDS.** Use crosstip screwdriver bit.

   b. Install cover (1) with two screws (3). Torque two screws (3) to **2 INCH-POUNDS.** Use crosstip screwdriver bit.

6. **Inspect (TI).**

7. **Install SDD panel circuit cards (para 8-2-28).**

9. **Install SDD panel switch (para 8-2-10).**

9. **Install SDD front panel (para 8-2-9).**

END OF TASK

8-2-12. SIGNAL DATA CONVERTER REMOVAL/INSTALLATION 8-2-12

This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

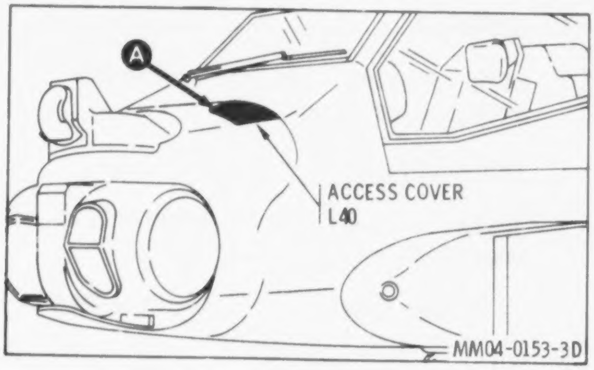
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access cover L40 removed



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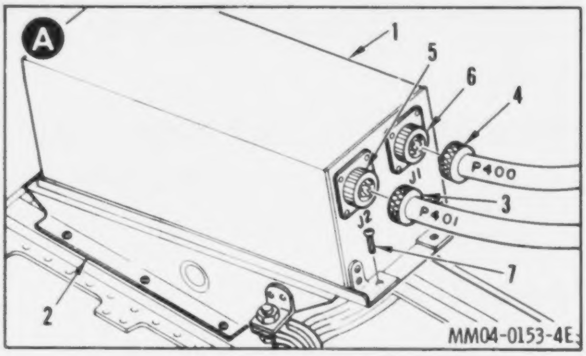
8-2-12. SIGNAL DATA CONVERTER REMOVAL/INSTALLATION (cont) 8-2-12

A. REMOVAL

1. Remove signal data converter (1) from mounting tray (2).
   - a. Detach connector P401 (3) from connector A82J2 (5).
   - b. Detach connector P400 (4) from connector A82J1 (6).
   - c. Remove two screws (7).
   - d. Lift signal data converter (1) up and out of mounting tray (2).

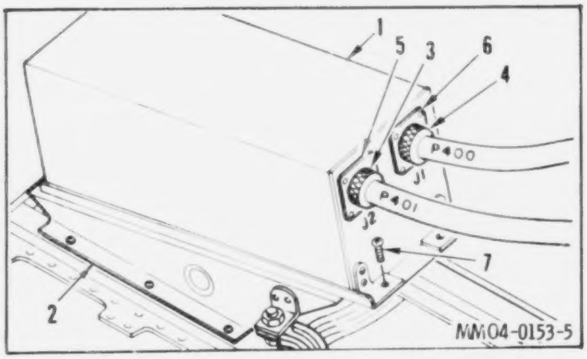

A
1
5
6
4
P400
J1
3
J2
P401
7
2
MM04-0153-4E

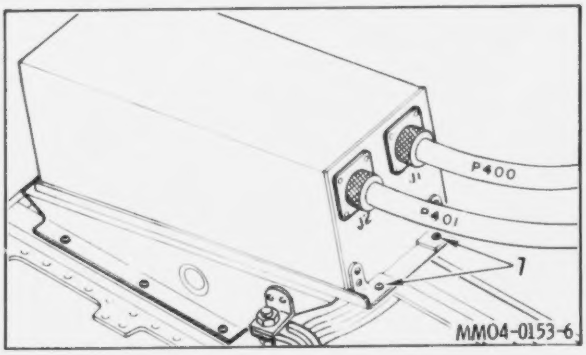
B. CLEANING

Wipe mounting tray and converter with a clean rag.

C. INSTALLATION

1. Install signal data converter (1) on mounting tray (2).
   - a. Slide converter (1) to the rear of mounting tray (2).
   - b. Install two screws (7).
   - c. Attach connector P400 (4) to connector A82J1 (6).
   - d. Attach connector P401 (3) to connector A82J2 (5).
2. Inspect (TI).
3. Perform engine instrument operational check (TM 55-1520-238-T).
4. Secure access cover L40 (para 2-2-2).


1
5
3
6
4
P400
J1
P401
J2
7
2
MM04-0153-5


P400
J1
J2
P401
7
MM04-0153-6

END OF TASK

8-2-13. SIGNAL DATA CONVERTER CIRCUIT CARD REPLACEMENT (AVIM) 8-2-13

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Bar, Shunt, 4-inch	1005-01-241-4925
Strap, Grounding Large	4240-01-165-8865

Materials/Parts:

(E32) Cloth, Lint-Free

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
8-2-12	Signal data converter removed

CAUTION

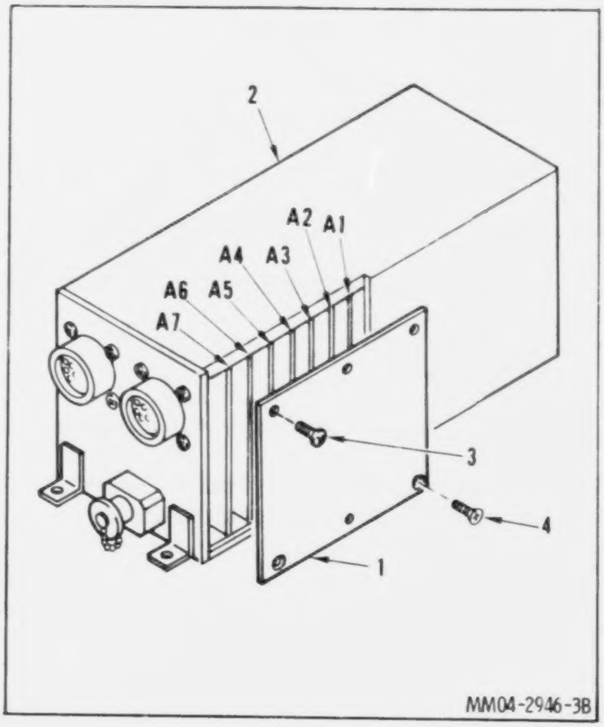
Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when cover is off, and when handling circuit cards.

NOTE

The following task is typical for all circuit cards in the signal data converter.

A. REMOVAL

1. **Remove right side cover (1) from signal data converter (2).** Remove four screws (3) and two countersunk screws (4).



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8-2-13. SIGNAL DATA CONVERTER CIRCUIT CARD REPLACEMENT (AVIM) (cont) 8-2-13

2. Remove circuit card (5) from converter (2). Wear grounding strap.

NOTE

Step 3 is typical only for removal of oil pressure excitation card A4.

3. Install shunt bar (6).

B. CLEANING

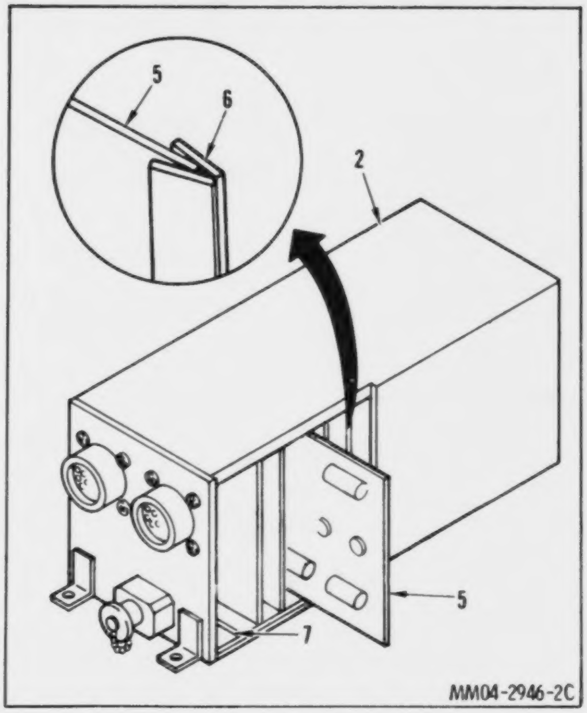
Wipe guide slots with a clean lint-free cloth (E32).

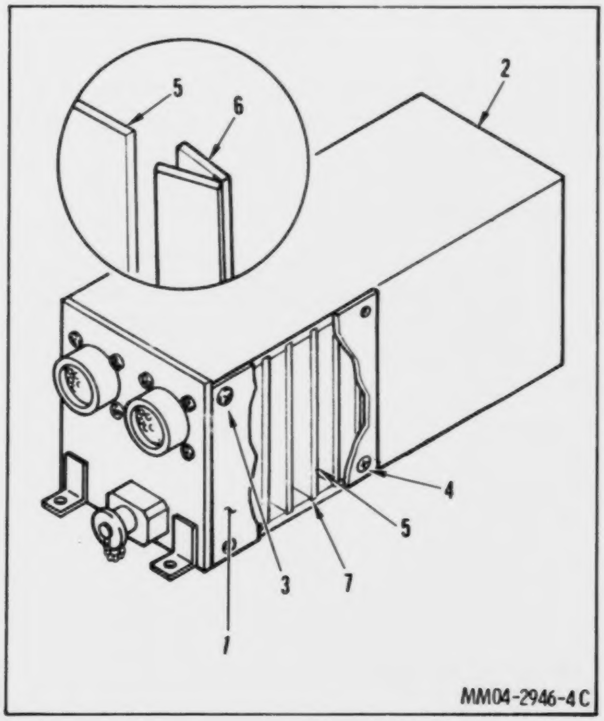
C. INSPECTION

1. Check signal data converter for cracks. None allowed.
2. Check signal data converter for nicks and dents (para 8-2-1).

D. INSTALLATION

1. Install card (5) in converter (2).
   a. If installed, remove shunt bar (6).
   b. Insert card (5) into guide slots (7).
   c. Push card (5) until fully seated.
2. Install cover (1). Install four screws (3) and two countersunk screws (4).





END OF TASK

8-2-14. SIGNAL DATA CONVERTER POWER SUPPLY REPLACEMENT (AVIM) 8-2-14

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Bar, Shunt, PC 4-inch	1005-01-241-4925
Strap, Grounding Large	4240-01-165-8865

Materials/Parts:

(E32)	Cloth, Lint-Free
(E83)	Bag, Plastic

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

CAUTION

- The power supply contains a circuit card which has a complementary metal oxide semiconductor (CMOS) that can be damaged by static electrical discharge.
- The power supply shall be housed in a conductive container during storage or spares shipment. To prevent damage to the power supply, a shunt bar shall be attached to the connector when not in use.
- The repairer shall wear a properly grounded wrist strap when handling power supply.

NOTE

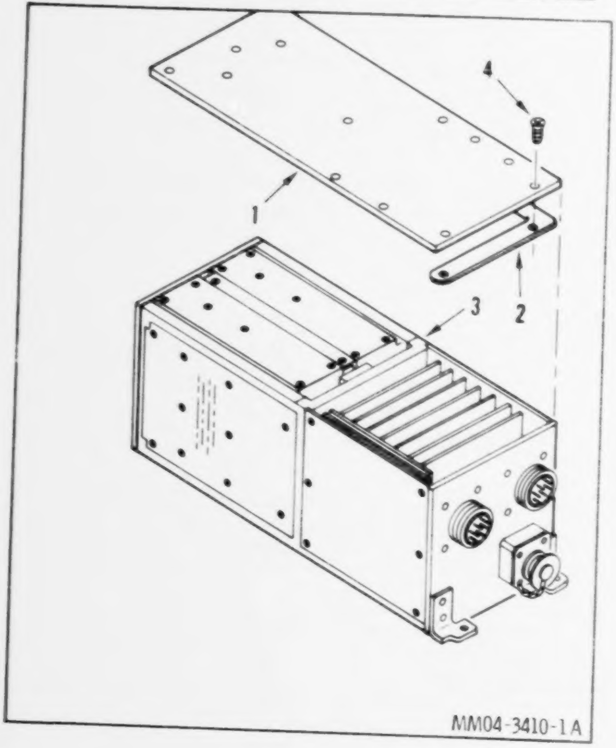
This task is typical for either power supply.

A. REMOVAL

1. **Remove top cover (1) and shims (2) from chassis (3).**

   a. Remove 13 screws (4) from chassis (3).

   b. Remove top cover (1). Remove shims (2) if installed.



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8-2-14. SIGNAL DATA CONVERTER POWER SUPPLY REPLACEMENT (AVIM) (cont) 8-2-14

2. **Remove front cover (5) from chassis (3) by removing 10 screws (6).**

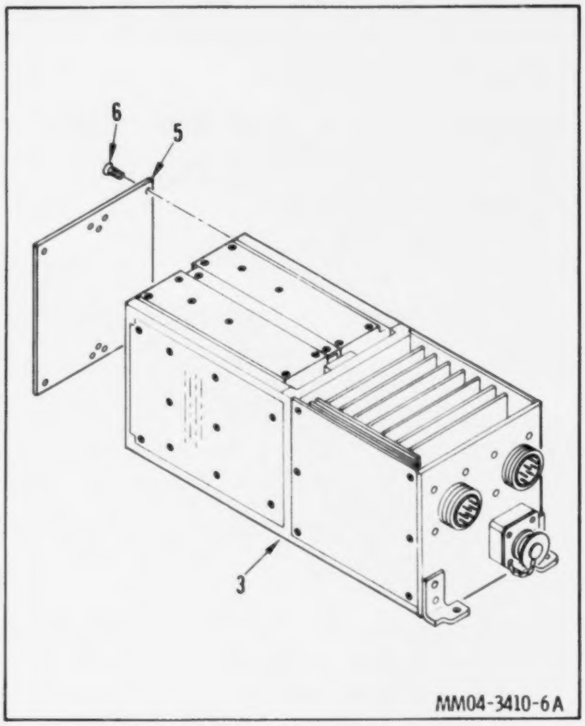
3. **Remove power supply (7) from chassis (3).** Use grounding strap and shunt bar.

   a. Remove six screws (8) from bottom of chassis (3).

   b. Grasp power supply (7) and pull toward rear of frame (9) to detach connector P1 (10) from connector A14J1/A15J1 (11).

   c. Remove power supply (7) from chassis (3). Install shunt bar (12) on connector P1 (10).

   d. Store removed power supply (7), with shunt bar (12) installed, in a plastic bag (E83).

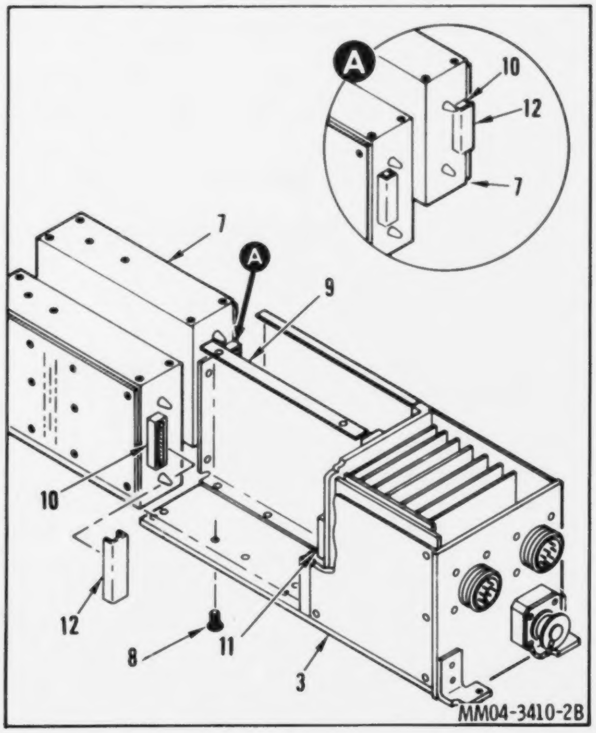


B. **CLEANING**

Wipe all removed and attaching parts with a clean lint-free cloth (E32).

C. **INSPECTION**

Check chassis and covers for cracks, nicks, and dents (para 8-2-1).



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8-2-14. SIGNAL DATA CONVERTER POWER SUPPLY REPLACEMENT (AVIM) (cont) 8-2-14

D. INSTALLATION

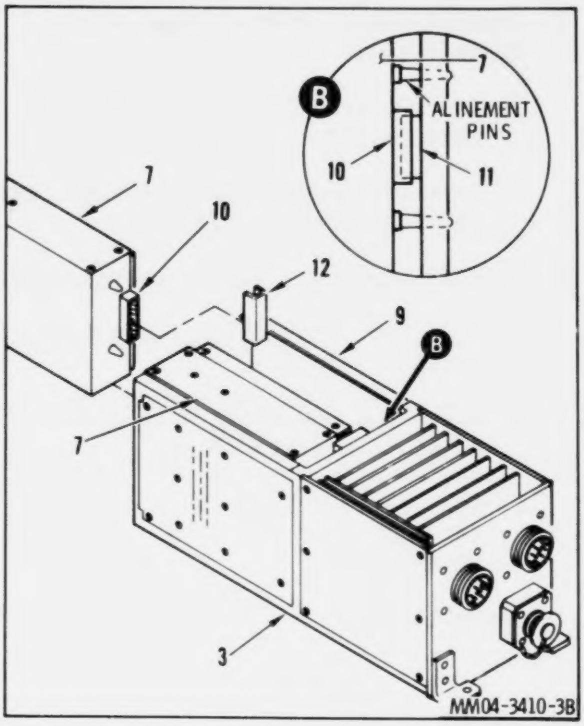
1. **Install power supply (7) in chassis (3).** Use grounding strap.

   a. Remove power supply (7) from plastic bag. Remove shunt bar (12).

   b. Position power supply (7) inside chassis (3).

   c. Slide power supply (7) toward front of frame (9) to attach connector A14J1/A15J1 (11) to connector P1 (10) and aline screw holes.

   d. Install six screws (8) through chassis (3) into power supply (7).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7
ALINEMENT PINS
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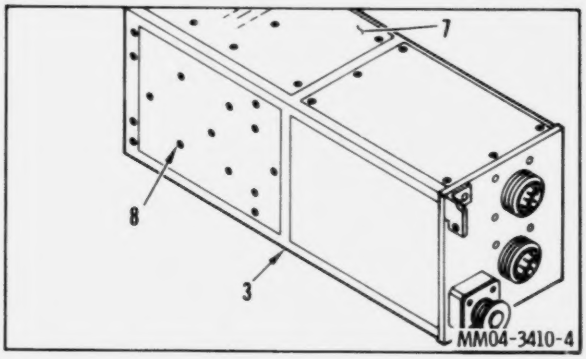
7
8
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8-2-14. SIGNAL DATA CONVERTER POWER SUPPLY REPLACEMENT (AVIM) (cont) 8-2-14

2. Install front cover (5) on chassis (3).

a. Aline cover (5) with screw holes on chassis (3).

b. Install 10 screws (6) through cover (5) into chassis (3).

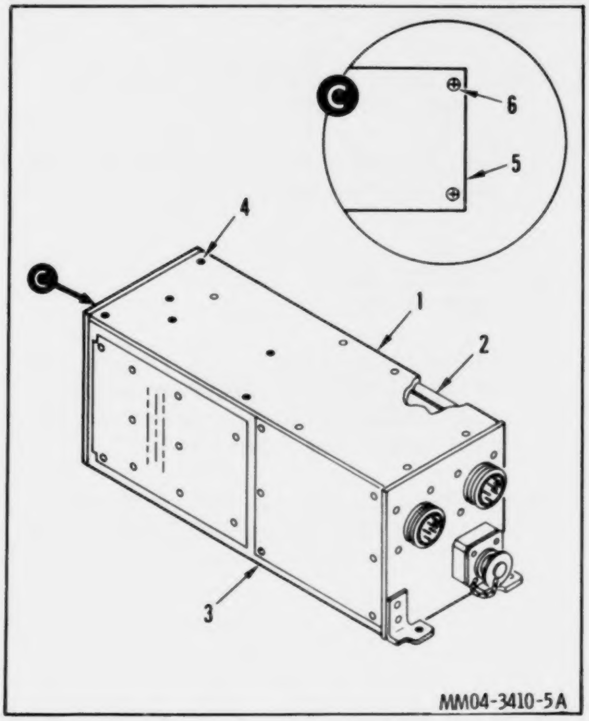
3. Install top cover (1) on chassis (3).

a. Position shims (2), as required, on chassis (3).

b. Aline top cover (1) with screw holes on chassis (3).

c. Install 13 screws (4) through cover (1) into chassis (3).

4. Inspect (TI).



END OF TASK

8-2-15. FUEL QUANTITY INDICATOR REMOVAL/INSTALLATION 8-2-15

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

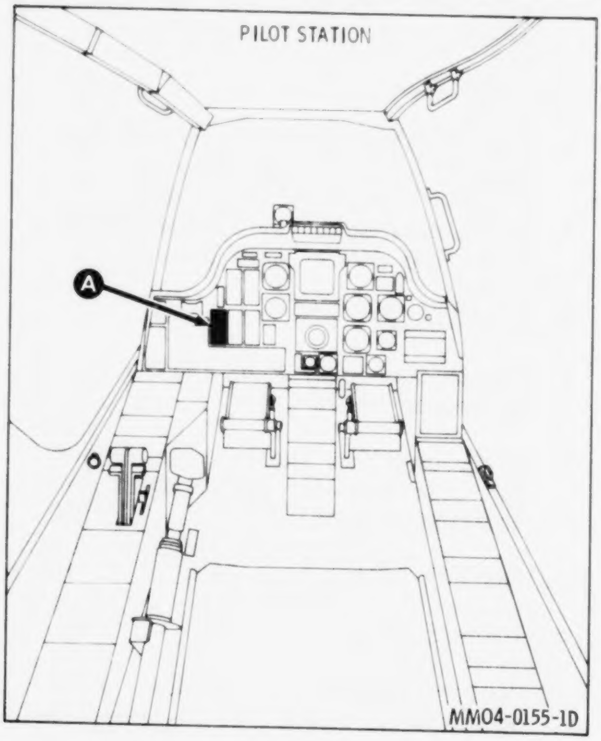
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**



2. **Open ENG INST circuit breaker on pilot center circuit breaker panel.**

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8-2-15. FUEL QUANTITY INDICATOR REMOVAL/INSTALLATION (cont) 8-2-15

3. Remove fuel quantity indicator (1).

a. Remove four screws (2).

b. Remove indicator (1) from panel (3).

c. Detach connector P253 (4) from connector M17J1 (5).

4. Lift fuel quantity indicator (1) from panel (3).

B. CLEANING

Wipe mounting area and indicator with a clean rag.

C. INSPECTION

1. **Check fuel quantity indicator for cracks.** None allowed.

2. **Check fuel quantity indicator for nicks and dents** (para 8-2-1).

D. INSTALLATION

1. **Attach connector P253 (4) to connector M17J1 (5).**

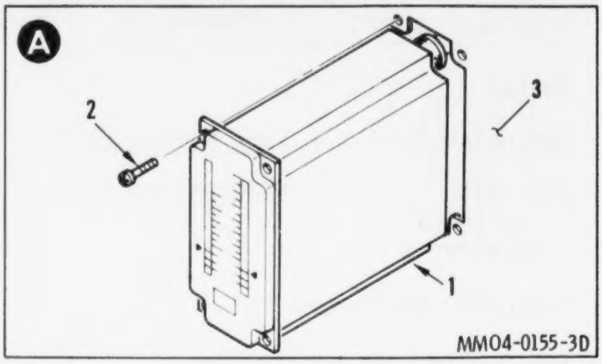
2. **Position pilot quantity indicator (1) to aline with screw holes in instrument panel (3).**

3. **Install four screws (2).**

4. **Inspect (TI).**

5. **Perform engine instruments operational check** (TM 55-1520-238-T).

END OF TASK



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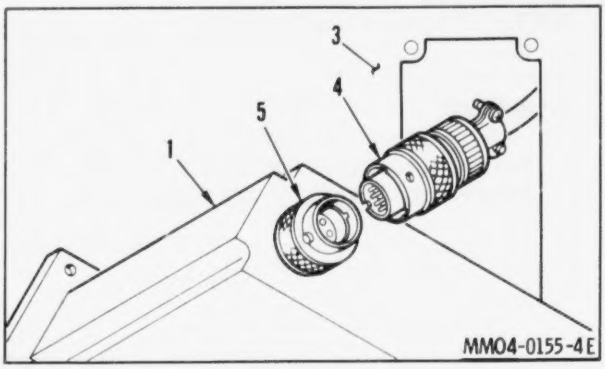

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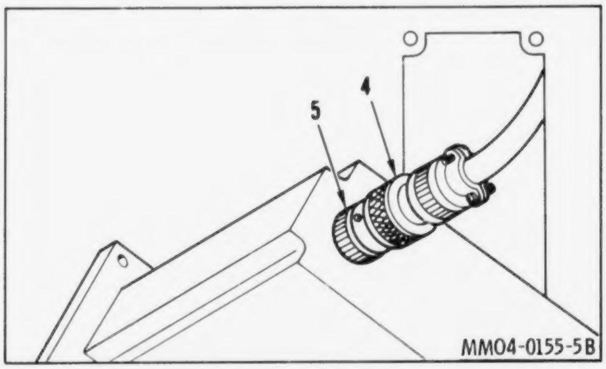

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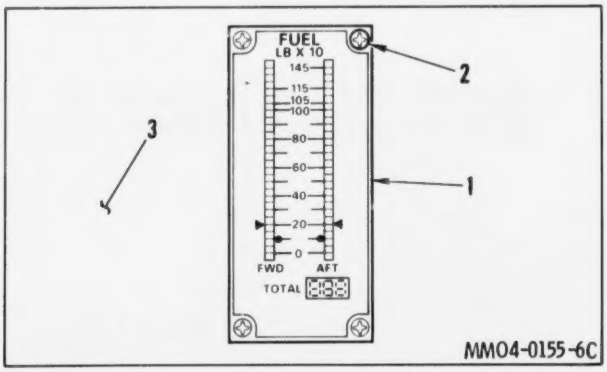


MM04-0155-6C

8-2-16. REFUEL INDICATOR REMOVAL/INSTALLATION 8-2-16

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
10-2-3	Refueling panel removed

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

A. **REMOVAL**

1. **Remove refuel indicator (3) from refueling panel (4).**
   a. Remove four nuts (5), four washers (6) and four screws (7).
   b. Detach connector P1 (1) from connector J1 (2).

B. **CLEANING**

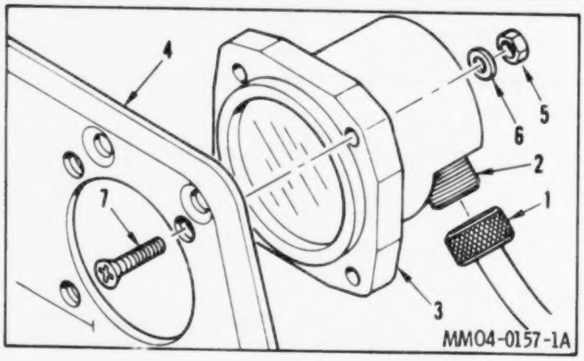
Wipe mounting areas and indicator with a clean rag.

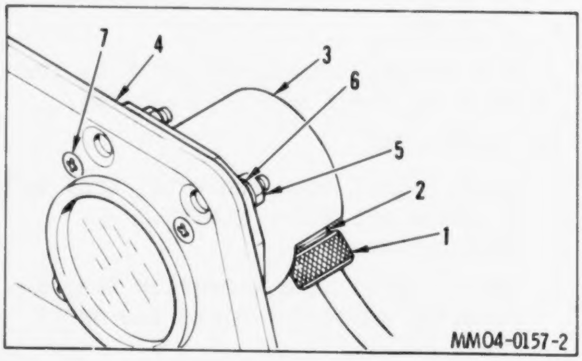
C. **INSPECTION**

Check refuel indicator and refueling panel for nicks, dents, and cracks (para 8-2-1).

D. **INSTALLATION**

1. **Install refuel indicator (3).**
   a. Attach connector P1 (1) to connector J1 (2).
   b. Positon indicator (3) to rear of panel (4).
   c. Install four screws (7), four washers (6), and four nuts (5).
2. **Inspect (TI).**
3. **Install refueling panel (para 10-2-3).**





END OF TASK

8-2-17. SIGNAL DATA CONVERTER TRAY REMOVAL/INSTALLATION 8-2-17

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access cover L40 removed
8-2-12	Signal data converter removed

A. REMOVAL

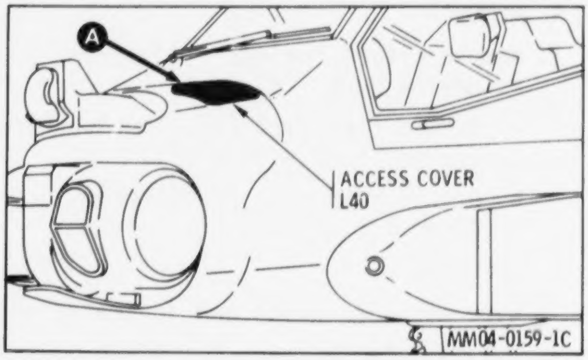
1. **Remove signal data converter tray (1).**
   a. Remove bolt (2), washer (3), and spacer (4), securing clamp (5) to tray (1).
   b. Remove six screws (6), and six washers (7).
   c. Lift tray (1) clear of mounting shelf (8).

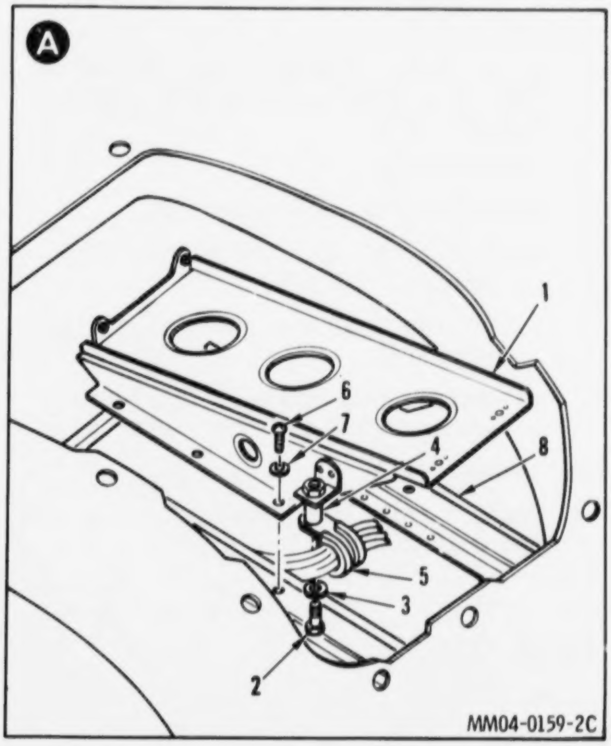
B. CLEANING

Wipe signal data converter tray and mounting shelf with a clean rag.

C. INSPECTION

1. **Check signal data converter tray and mounting shelf for cracks.**
   None allowed.
2. **Check signal data converter tray and mounting shelf for nicks and dents** (para 8-2-1).
3. **Check mounting shelf nut plates for stripped or damaged threads.** Acceptable thread damage cannot exceed 50 percent of one thread.





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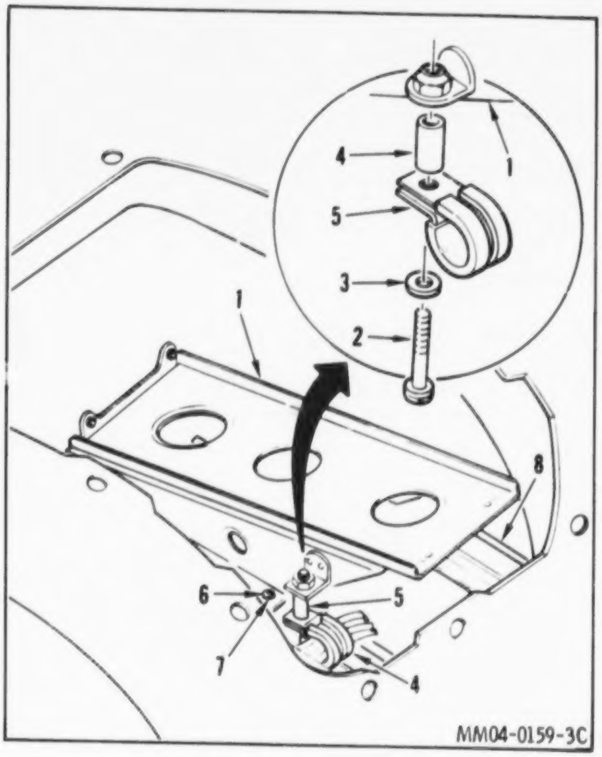
8-2-17. SIGNAL DATA CONVERTER TRAY REMOVAL/INSTALLATION (cont) 8-2-17

D. INSTALLATION

1. Install signal data converter tray (1).
   a. Position tray (1) on shelf (8). Aline tray base with mounting shelf screw holes.
   b. Install six washers (7) and six screws (6).
   c. Install bolt (2) through washer (3), clamp (5), spacer (4) into tray (1) bracket.
2. Inspect (TI).
3. Install signal data converter (para 8-2-12).
4. Secure access cover L40 (para 2-2-2).



END OF TASK

8-2-18. CPG ENGINE INSTRUMENT DIMMER POWER SUPPLY REMOVAL/INSTALLATION 8-2-18

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

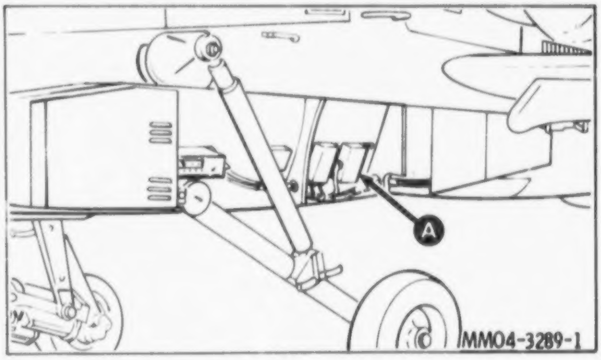
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Fairing L140 opened

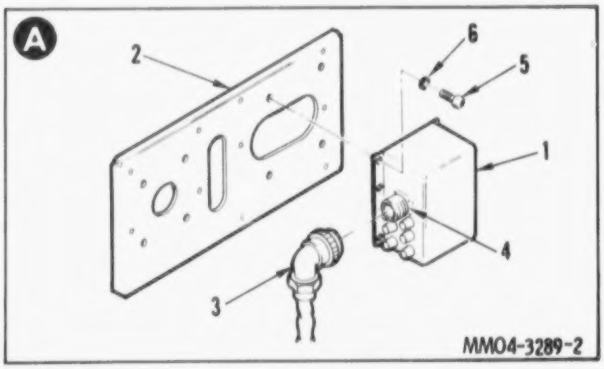
A. REMOVAL

1. Enter CPG station (para 1-7-1). Observe all safety precautions.
2. Open ENG INST circuit breaker on CPG left console circuit breaker panel.



MM04-3289-1

3. Remove power supply (1) from mount (2).
    a. Detach connector P1093 (3) from connector A518J1 (4).
    b. Remove six screws (5) and six washers (6) from power supply (1) and mount (2).



MM04-3289-2

B. CLEANING

Wipe mount and power supply with a clean rag.

GO TO NEXT PAGE

8-2-18. CPG ENGINE INSTRUMENT DIMMER POWER SUPPLY REMOVAL/INSTALLATION (cont) 8-2-18

C. INSPECTION

1. Check mount for cracks, loose or missing rivets and stripped nut plates. None allowed.

2. Check connector for bent or broken pins. None allowed.

D. INSTALLATION

1. Install power supply (1) on mount (2).

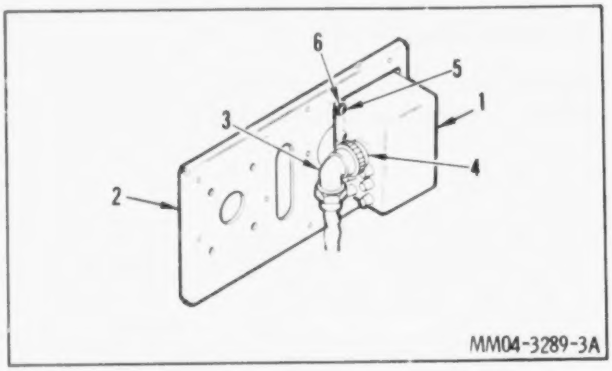
   a. Install six washers (6) and six screws (5).

   b. Attach connector P1093 (3) to connector A518J1 (4).

2. Inspect (TI).

3. Secure fairing L140 (para 2-2-2).

4. Perform engine instrument operational check (TM 55-1520-238-T).



END OF TASK

8-2-19. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL REMOVAL/INSTALLATION 8-2-19

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

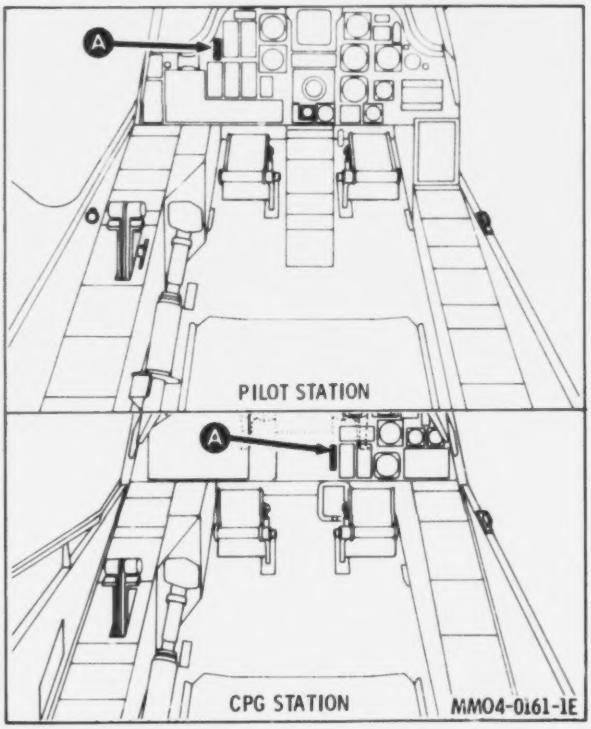
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot/CPG station (para 1-7-1). Observe all safety precautions.
2. Open ENG INST circuit breaker on pilot center circuit breaker panel.



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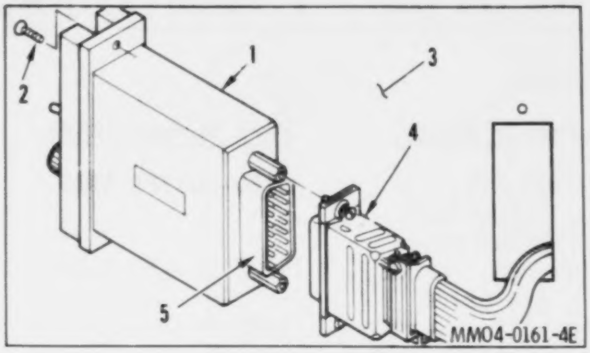
8-2-19. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL REMOVAL/INSTALLATION (cont) 8-2-19

3. Remove DIM/TEST control panel (1).

   a. Remove two screws (2).

   b. Remove DIM/TEST control panel (1) from instrument panel (3).

4. Detach connector P787 (pilot)/P1092 (CPG) (4) from connector A114J1 (pilot)/A517J1 (CPG) (5).



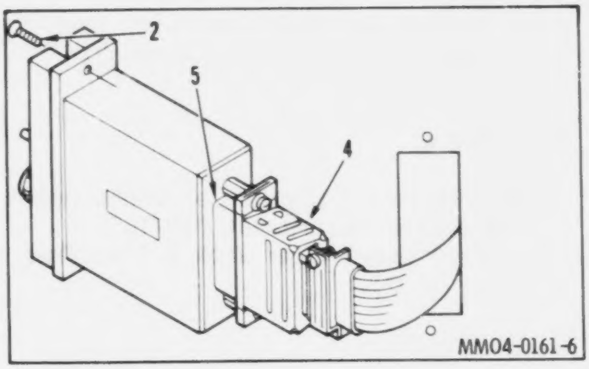
B. CLEANING

Wipe mounting areas and control panel with a clean rag.

C. INSPECTION

1. Check DIM/TEST control panel and instrument panel mounting areas for cracks, nicks, and dents. None allowed.

2. Check DIM/TEST control panel and instrument panel nut plates for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.



D. INSTALLATION

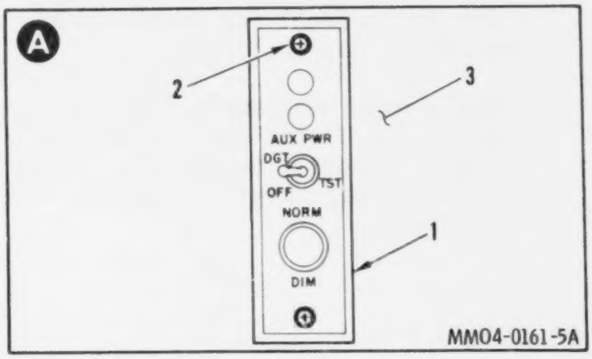
1. Attach connector P787 (pilot)/P1092 (CPG) (4) to connector A114J1 (pilot)/A517J1 (CPG) (5).

2. Aline panel (1) and panel (3) screw holes.

3. Install two screws (2).

4. Inspect (TI).

5. Perform engine instruments operational check (TM 55-1520-238-T).



END OF TASK

8-2-20. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL FRONT PANEL REMOVAL/INSTALLATION (AVIM) 8-2-20

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Wrench, Torque, 1/4 Drive	5120-00-117-4832
Bit, Screwdriver, Flat Tip	5120-00-293-2057
Set, Hex Key	5120-00-935-4641

Materials/Parts:

(E32)	Cloth, Lint-Free
(E92)	Lubricant

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

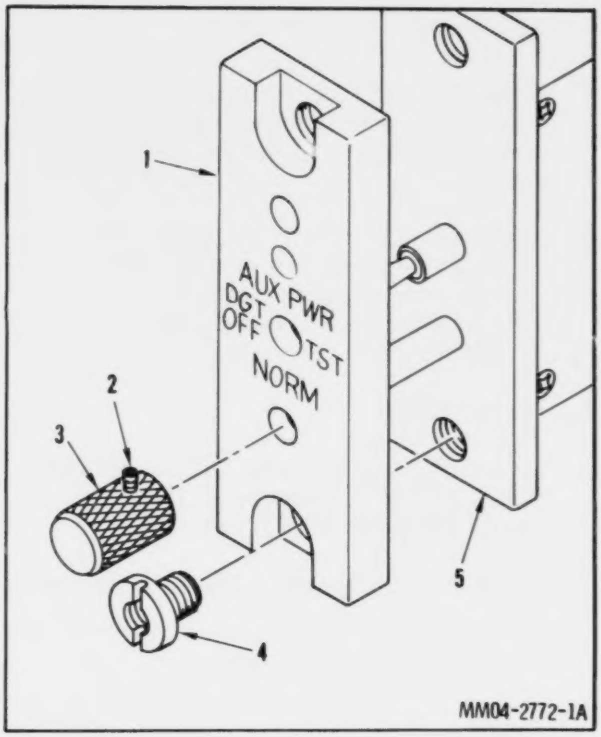
A. REMOVAL

1. **Remove front panel (1).**

   a. Loosen setscrew (2). Use 0.035-inch hex key.

   b. Remove dimmer control knob (3).

   c. Remove two bushings (4). Remove panel (1) from instrument DIM/TEST panel case (5).



B. CLEANING

Wipe mounting surface of front panel and engine instrument DIM/TEST control panel case with a lint-free cloth (E32).

C. INSPECTION

1. **Check front panel for cracks nicks, and dents.** None allowed.

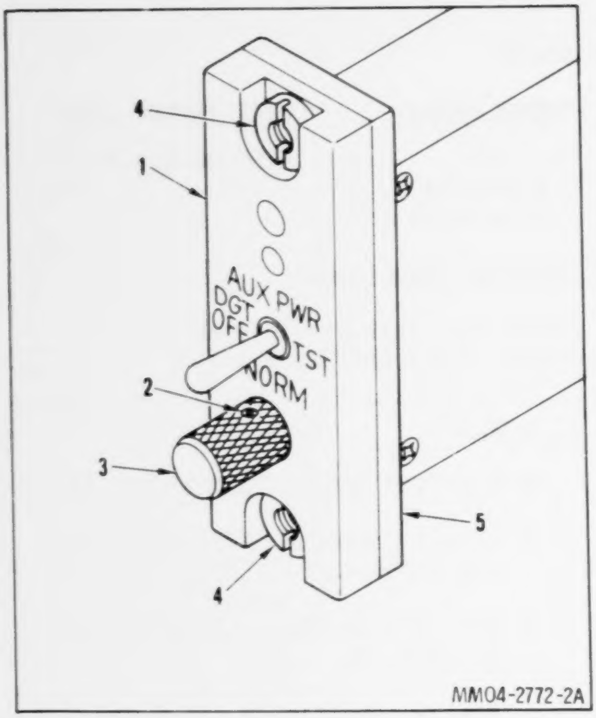
2. **Check engine instrument DIM/TEST control panel case for stripped or damaged threads.** Acceptable thread damage cannot exceed 50 percent of one thread.

GO TO NEXT PAGE

8-2-20. PILOT/CPG ENGINE INSTRUMENT DIM/TEST CONTROL PANEL FRONT PANEL REMOVAL/INSTALLATION (AVIM) (cont) 8-2-20

D. INSTALLATION

1. **Install panel (1).** Torque two bushings (4) to **1.5 INCH-POUNDS.**
   a. Lubricate two bushings (4). Use spray lubricant (E92).
   b. Position panel (1) mounting holes on case (5) threaded holes.
   c. Install two bushings (4). Torque bushings to **1.5 INCH-POUNDS.** Use flat tip screwdriver bit.
2. **Install dimmer control knob (3) by tightening setscrew (2).** Use 0.035-inch hex key.
3. **Inspect (TI).**



END OF TASK

8-2-21. FUEL SIGNAL CONDITIONER REMOVAL/INSTALLATION 8-2-21

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access cover L40 removed

A. REMOVAL

Remove fuel signal conditioner (1).

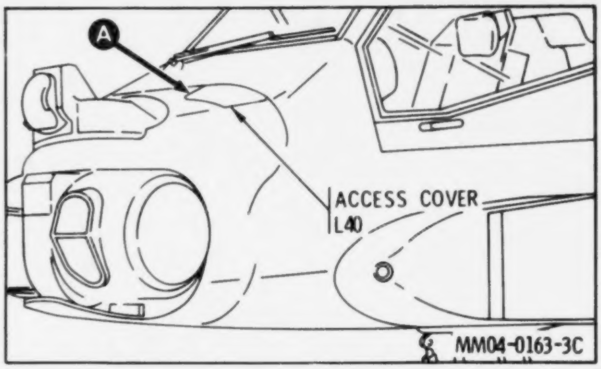
a. Detach connector P937 (2) from connector A308J1 (3).

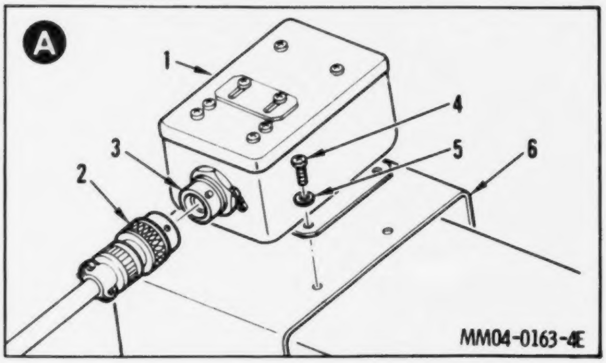
b. Remove four screws (4) and four washers (5).

c. Remove conditioner (1) from mounting shelf (6).

B. CLEANING

Wipe mounting shelf and signal conditioner with a clean rag.





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8-2-21. FUEL SIGNAL CONDITIONER REMOVAL/INSTALLATION (cont) 8-2-21

C. INSPECTION

1. **Check conditioner and mounting shelf for cracks.** None allowed.

2. **Check conditioner and mounting shelf for nicks and dents** (para 8-2-1).

3. **Check mounting shelf screw holes for stripped or damaged threads.** Acceptable thread damage cannot exceed 50 percent of one thread.

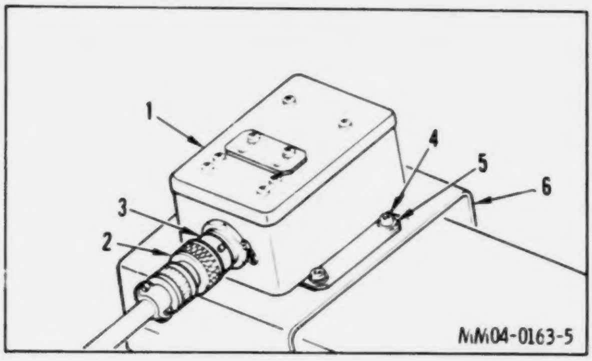
D. INSTALLATION

1. **Install conditioner (1) on mounting shelf (6).**
   a. Aline conditioner base with shelf (6) screw holes. Connector (3) must face outboard.
   b. Install four washers (5) and screws (4).
   c. Attach connector P937 (2) to connector A308J1 (3).

2. **Inspect (TI).**

3. **Secure access cover L40** (para 2-2-2).

4. **Perform engine instruments operational check** (TM 55-1520-238-T).



END OF TASK

8-2-22. TORQUE, TGT, FUEL AND N_G INDICATORS LIGHT PANEL OR DIGITAL DISPLAY DRIVER CIRCUIT CARD REPLACEMENT (AVIM) 8-2-22

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Wrench, Torque, 1/4 Drive	5120-00-117-4832
Bit, Screwdriver, Flat Tip	5120-00-293-2057
Strap, Grounding, Large	4240-01-165-8865

Materials/Parts:

(E11)	Primer, Sealant
(E32)	Cloth, Lint-Free
(E93)	Compound, Sealing

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

CAUTION

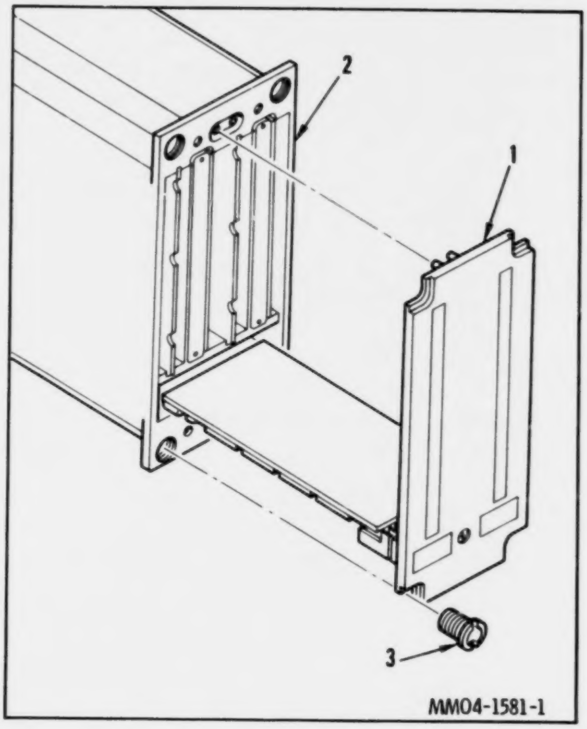
Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when cover is off, and when handling circuit cards.

A. REMOVAL

1. **Remove light panel (1) from indicator (2).**

   a. Remove four bushings (3).

   b. Pull panel (1) from indicator (2).



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8-2-22. TORQUE, TGT, FUEL AND N_G INDICATORS LIGHT PANEL OR DIGITAL DISPLAY DRIVER CIRCUIT CARD REPLACEMENT (AVIM) (cont) 8-2-22

2. **Remove digital display driver circuit card (4) from panel (1).** Remove screw (5).

B. **CLEANING**

Wipe panel and indicator guides with a clean lint-free cloth (E32).

C. **INSPECTION**

Check panel for cracks, nicks, and dents. None allowed.

D. **INSTALLATION**

1. **Install card (4) on panel (1).** Install screw (5).

2. **Install panel (1) on indicator (2).** Torque four bushings (3) to **1.5 INCH-POUNDS.**

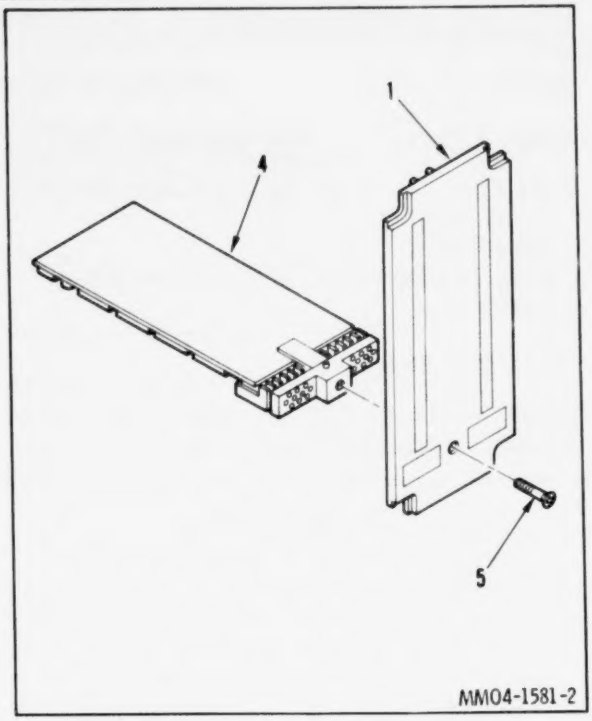
   a. Position card (4) in guides (6).

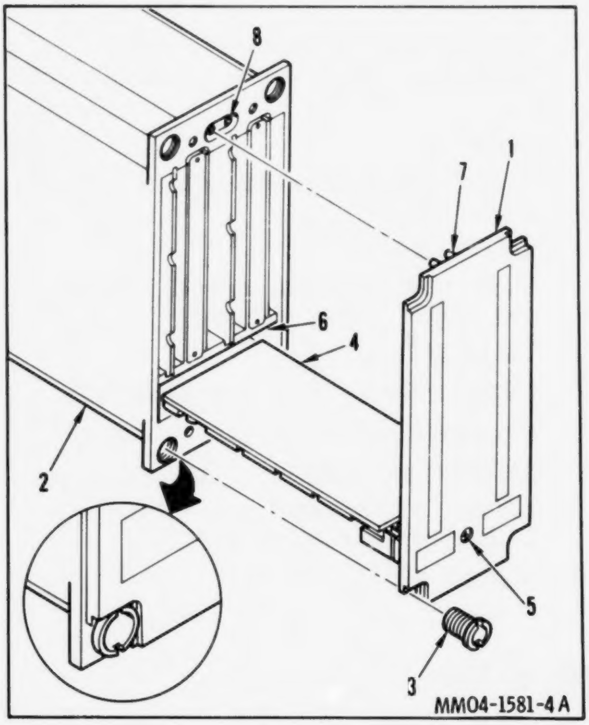
   b. Aline two pins (7) with two receptacles (8).

   c. Apply primer (E11) and sealing compound (E93) to four bushings (3).

   d. Install four bushings (3). Torque bushings to **1.5 INCH-POUNDS.** Use flat tip screwdriver bit.

3. **Inspect (TI).**





END OF TASK

8-2-23. ANALOG OR INTERFACE CIRCUIT CARD ON TORQUE, TGT, FUEL, AND N_G INDICATORS REPLACEMENT (AVIM) 8-2-23

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Strap, Grounding Large	4240-01-165-8865

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
8-2-22	Light panel or digital display driver removed

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit card.

A. **REMOVAL**

Remove circuit card (1) from indicator (2). Wear grounding strap.

B. **CLEANING**

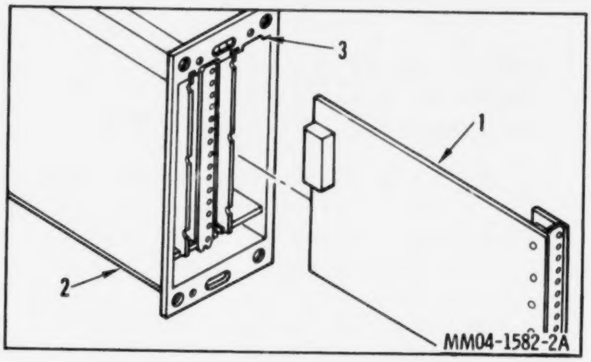
Wipe indicator guides with a clean rag.

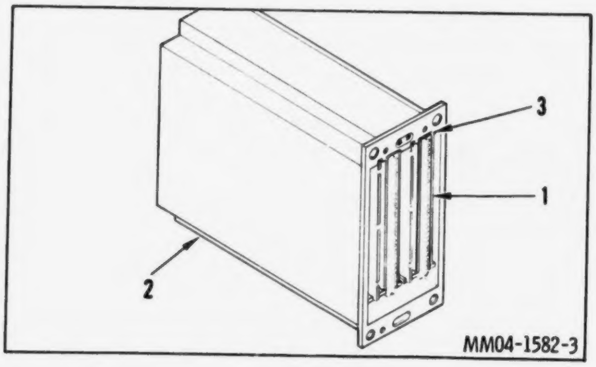
C. **INSPECTION**

Check indicator for cracks, nicks, and dents. None allowed.

D. **INSTALLATION**

1. **Install card (1) in indicator (2).**
   a. Insert card (1) into guides (3).
   b. Press card down (1) to seat.
2. **Install light panel or digital display driver** (para 8-2-22).
3. **Inspect (TI).**





END OF TASK

8-2-24. ENGINE/ROTOR RPM INDICATOR FRONT PANEL REMOVAL/INSTALLATION (AVIM) 8-2-24

This task covers: A. REMOVAL B. REPAIR C. CLEANING D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Strap, Grounding, Large	4240-01-165-8865
Wrench, Torque, 1/4 Drive	5120-00-117-4832
Bit, Screwdriver, Flat Tip	5120-00-293-2057

Materials/Parts:

(E11) Primer, Sealant
(E32) Cloth, Lint-Free
(E93) Compound, Sealing

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

CAUTION

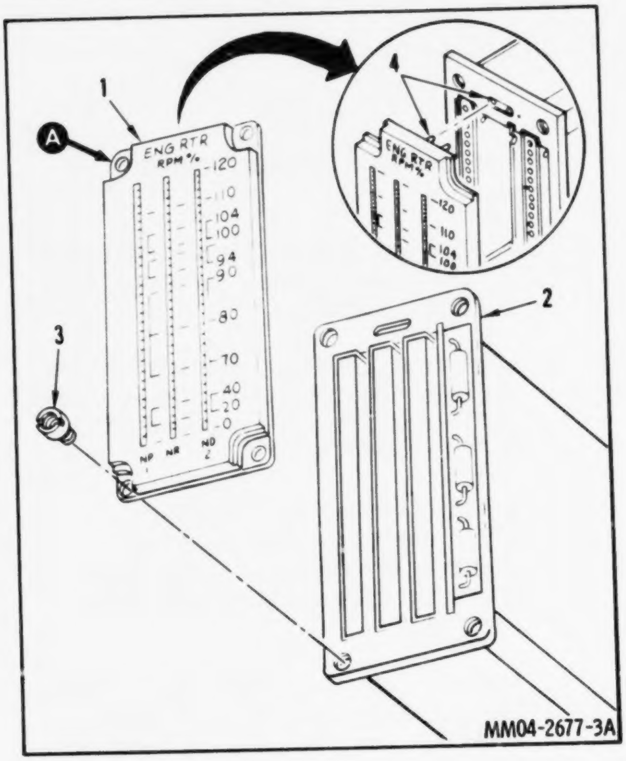
Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

A. REMOVAL

1. **Remove front panel (1) from indicator case (2). Wear grounding strap.**

   a. Remove four bushings (3).

   b. Carefully pull panel (1) away from case (2) until connector (4) disconnects.



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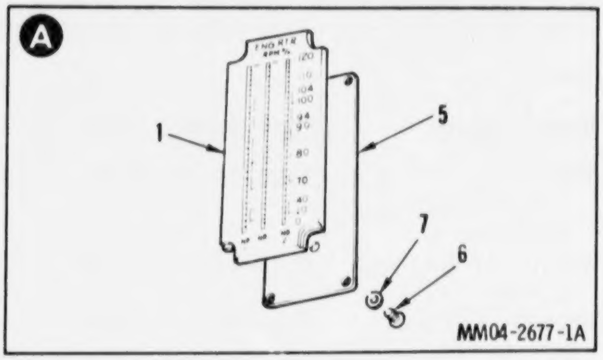
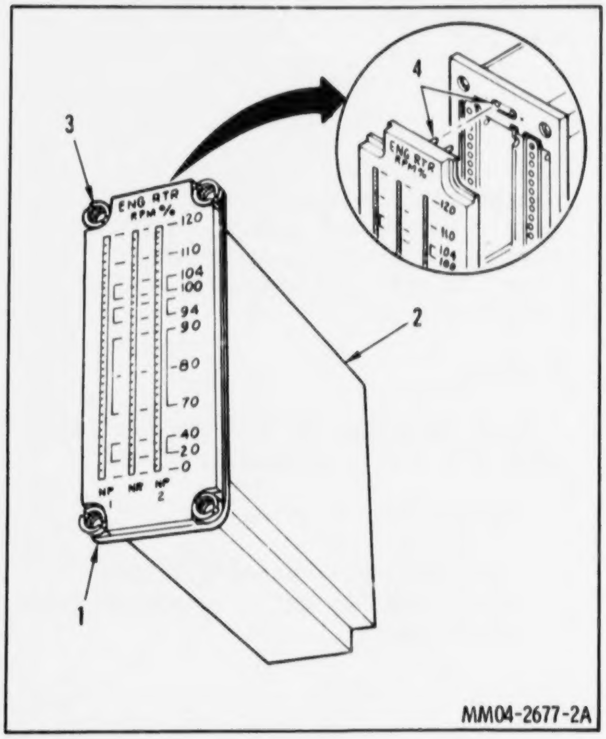
8-2-24. ENGINE/ROTOR RPM INDICATOR FRONT PANEL REMOVAL/INSTALLATION (AVIM) (cont) 8-2-24

B. REPAIR

1. Repair panel (1) by replacing lighting panel (5). Remove two screws (6) and two washers (7).
2. Position serviceable lighting panel (4) on panel (1).
3. Install two washers (7) and two screws (6).


A
ENG RTR RPM %
120
104
100
94
90
80
70
40
20
0
1
5
7
6
MM04-2677-1A


4
3
ENG RTR RPM %
120
110
104
100
94
90
80
70
40
20
0
NP 1
NR
NP 2
2
1
MM04-2677-2A

C. CLEANING

Wipe panel and indicator case with a clean lint-free cloth (E32).

D. INSTALLATION

CAUTION

Do not exceed **1.5 INCH-POUNDS** torque.

1. Install front panel (1) on indicator case (2). Torque four bushings (3) to **1.5 INCH-POUNDS.**
   a. Coat four bushings (3) with primer and sealing compound. Use primer (E11) and sealing compound (E93) to four bushings (3).
   b. Position panel (1) on case (2). Use care when alining electrical connector (4), then press to engage connector with panel (1).
   c. Install four bushings (3). Torque four bushings (3) to **1.5 INCH-POUNDS.** Use flat tip screwdriver bit.
2. Inspect (TI).

END OF TASK

8-2-25. ENGINE/ROTOR RPM INDICATOR CIRCUIT CARD REPLACEMENT (AVIM) 8-2-25

This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Bar Shunt 4-inch	1005-01-241-4925
Strap, Grounding, Large	4240-01-165-8865
Extractor, Circuit Card	5120-00-758-6653

Materials/Parts:

(E32) Cloth, Lint-Free

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
8-2-22	Front panel removed

CAUTION

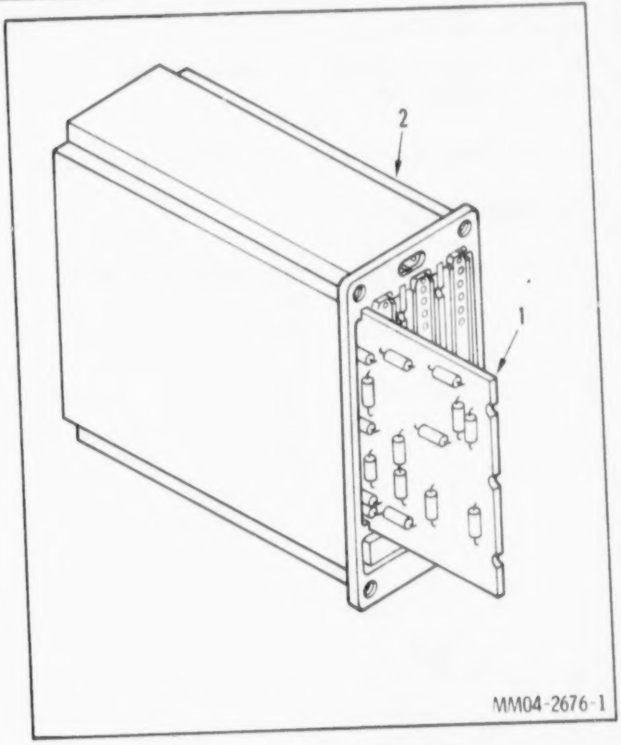
Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

NOTE

This task is typical for all circuit cards in the engine/rotor rpm indicator.

A. **REMOVAL**

1. **Remove circuit card (1) from indicator case (2).** Wear grounding strap. Use circuit card extractor.



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NOTE

Step 2 is typical only for removal of rpm interface card.

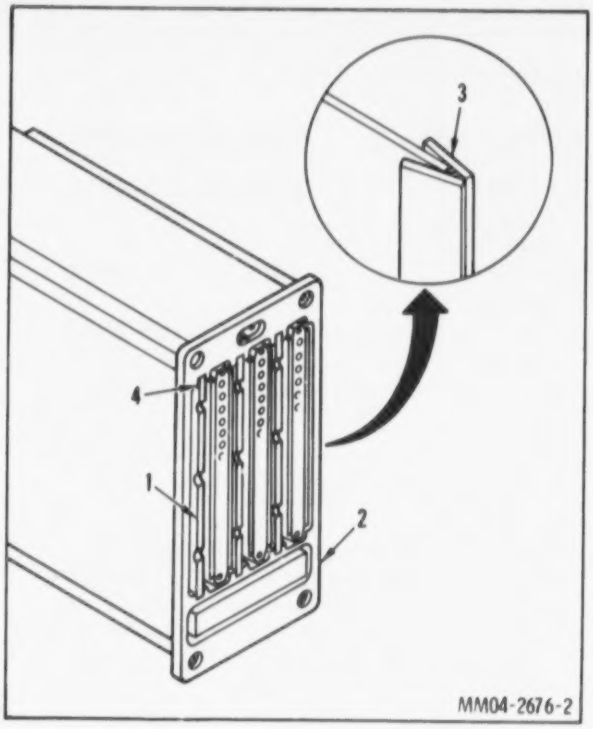
2. Install shunt bar (3).

B. CLEANING

Wipe guide slots with a clean lint-free cloth (E32).

C. INSTALLATION

1. Install card (1) in case (2).
   a. Remove shunt bar (3) if installed.
   b. Insert card (1) into guide slots (4).
   c. Push card (1) until fully seated.
2. Inspect (TI).
3. Install front panel (para 8-2-22).



END OF TASK

8-2-26. ENGINE OIL PRESSURE INDICATOR FRONT PANEL REMOVAL/INSTALLATION (AVIM)

8-2-26

This task covers: A. REMOVAL B. CLEANING C. REPAIR D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Wrench, Torque 1/4 Drive	5120-00-117-4832
Bit, Screwdriver, Flat Tip	5120-00-293-2057
Strap, Grounding, Large	4240-01-165-8865

Materials/Parts:

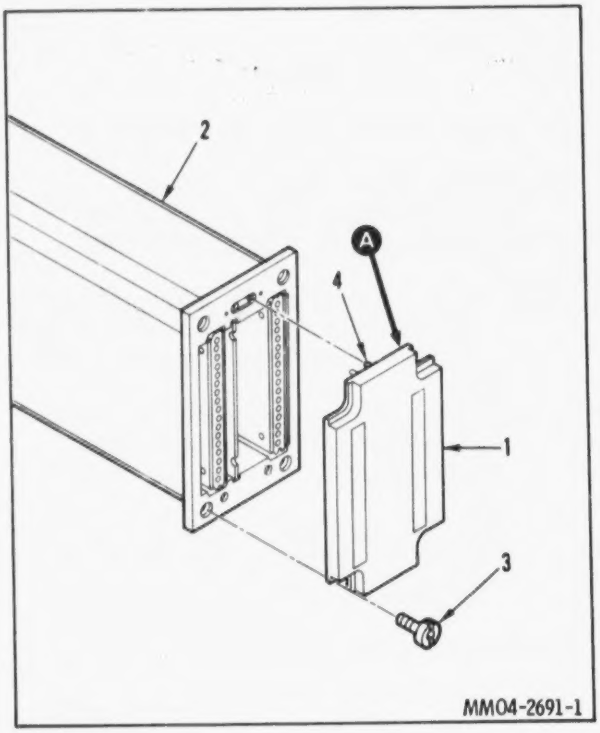
(E11)	Primer, Sealant
(E32)	Cloth, Lint-Free
(E93)	Compound, Sealing

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.



A. REMOVAL

1. **Remove engine oil pressure indicator front panel (1) from indicator case (2).**
   a. Remove four bushings (3).
   b. Carefully pull panel (1) away from case (2) until connector (4) disconnects.

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8-2-26. ENGINE OIL PRESSURE INDICATOR FRONT PANEL REMOVAL/INSTALLATION (AVIM) (cont) 8-2-26

B. CLEANING

Wipe front panel and mounting area with a clean lint-free cloth (E32).

C. REPAIR

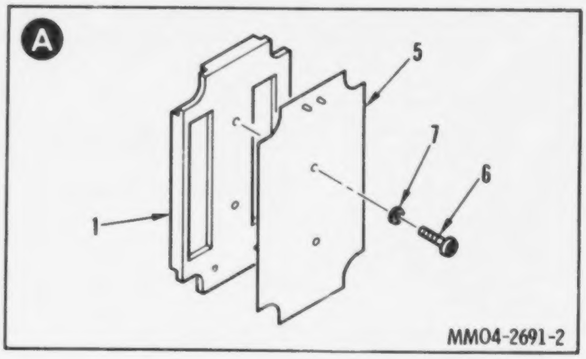
1. Repair panel (1) by replacing lighting panel (5). Remove two screws (6) and two washers (7).
2. Position serviceable panel (5) on front panel (1).
3. Install two washers (7), and two screws (6).

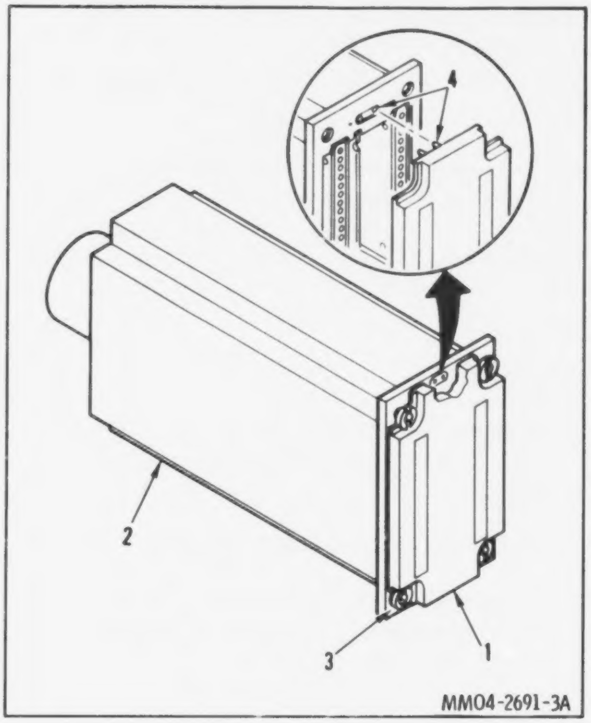
D. INSTALLATION

CAUTION

Do not exceed 1.5 INCH-POUNDS torque.

1. Install front panel (1) on indicator case (2). Torque four bushings (3) to 1.5 INCH-POUNDS.
   a. Coat four bushings (3) with primer and sealing compound. Use primer (E11) and sealing compound (E93).
   b. Aline and engage panel (1) with connector (4). Install four bushings (3).
   c. Torque four bushings (3) to 1.5 INCH-POUNDS. Use flat tip screwdriver bit.
2. Inspect (TI).





END OF TASK

8-2-27. ENGINE OIL PRESSURE INDICATOR CIRCUIT CARD REPLACEMENT (AVIM) 8-2-27

This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Strap, Grounding, Large	4240-01-165-8865
Extractor, Circuit Card	5120-00-758-6653

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

Equipment Conditions:

Ref	Condition
8-2-26	Front panel removed

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

NOTE

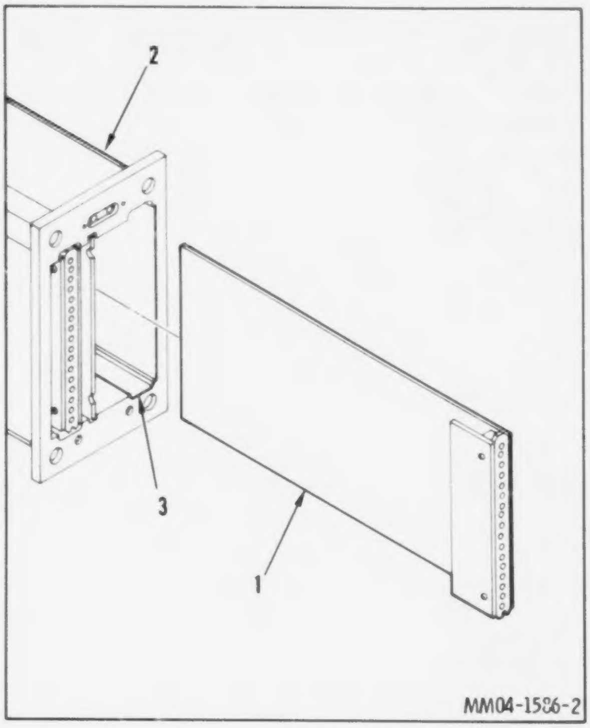
This task is typical for both circuit cards in the engine oil pressure indicator.

A. REMOVAL

1. **Wear grounding strap.**
2. **Remove circuit card (1) from indicator case (2).** Use circuit card extractor.

B. CLEANING

Wipe circuit card with a clean lint-free cloth (E32).



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8-2-27. ENGINE OIL PRESSURE INDICATOR CIRCUIT CARD REPLACEMENT (AVIM) (cont) 8-2-27

C. INSTALLATION

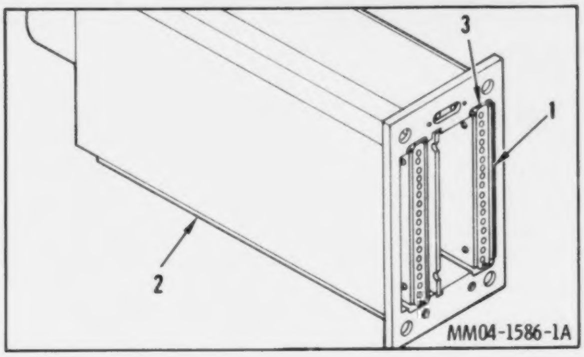
1. Install card (1) in case (2).

   a. Insert card (1) in guides (3).

   b. Push card (1) until fully seated.

2. Inspect (TI).

3. Install front panel (para 8-2-26).



END OF TASK

8-2-28. SELECTABLE DIGITAL DISPLAY (SDD) PANEL CIRCUIT CARD REPLACEMENT (AVIM) 8-2-28

This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Bar, Shunt, 4-inch	1005-01-241-4925
Strap, Grounding, Large	4240-01-165-8865

Materials/Parts:

(E32) Cloth, Lint-Free
(E83) Bag, Plastic

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

Equipment Conditions:

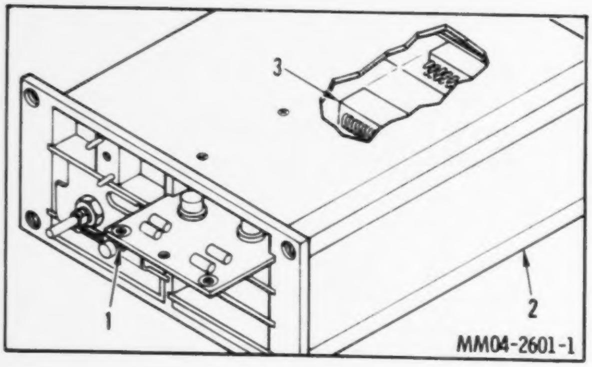
Ref	Condition
8-2-9	SDD front panel removed

NOTE

This task is typical for all circuit cards in the SDD.

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.



A. REMOVAL

1. Wear grounding strap.

2. Remove SDD circuit card (1) from SDD case (2) by pulling card (1) forward to release mating connector (3).

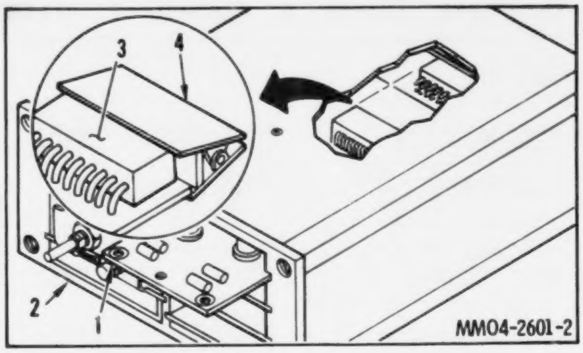
GO TO NEXT PAGE

8-2-28. SELECTABLE DIGITAL DISPLAY (SDD) PANEL CIRCUIT CARD REPLACEMENT (AVIM) (cont) 8-2-28

NOTE

Step 2 applies only to removal of digital voltmeter circuit card.

2. **Install shunt bar (4) on mating connector (3).** Place card (1) in plastic bag (E83).



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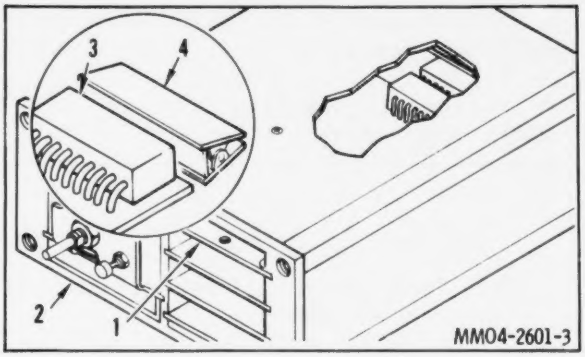
B. **CLEANING**

Wipe circuit card with a clean lint-free cloth (E32).

C. **INSTALLATION**

1. **Position serviceable SDD circuit card (1) for installation into SDD case (2).** Insert card to mate with mating connector (3).
2. **Inspect (TI).**
3. **Install SDD front panel** (para 8-2-9).



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END OF TASK

8-2-29. FUEL QUANTITY INDICATOR FRONT PANEL REMOVAL/INSTALLATION (AVIM) 8-2-29

This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Bit, Screwdriver, Flat Tip	5120-00-293-2057
Bit, Screwdriver, Crosstip	5120-00-223-6971
Strap, Grounding, Large	4240-01-165-8865
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Materials/Parts:

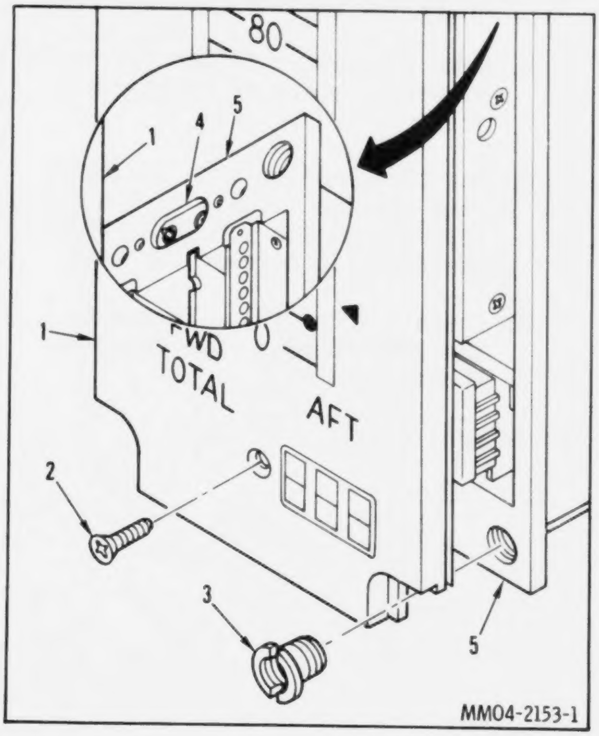
(E11)	Primer, Sealant
(E32)	Cloth, Lint-Free
(E93)	Compound, Sealing

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.



A. **REMOVAL**

1. **Wear grounding strap.**

2. **Remove front panel (1).** Wear grounding strap.

   a. Remove screw (2) and four bushings (3).

   b. Pull panel (1) free of connector (4) and clear of indicator case (5).

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8-2-29. FUEL QUANTITY INDICATOR FRONT PANEL REMOVAL/INSTALLATION (AVIM) (cont) 8-2-29

B. CLEANING

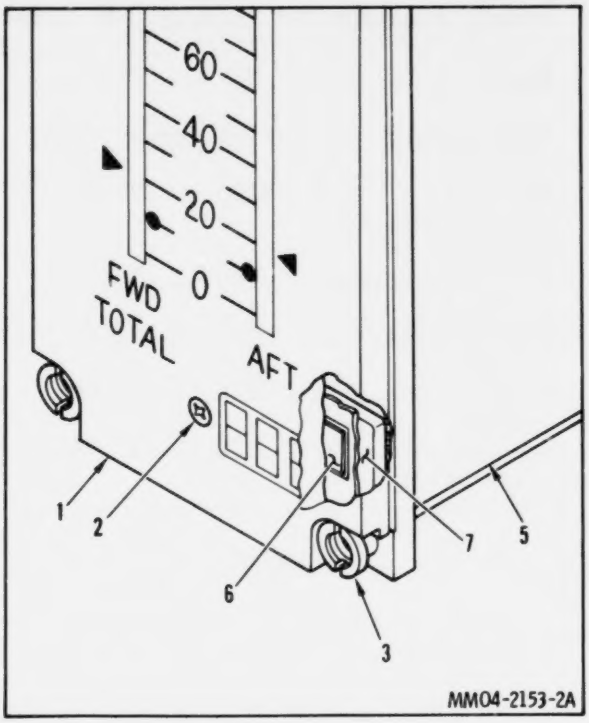
Wipe mounting area with a clean lint-free cloth (E32).

C. INSTALLATION

CAUTION

Do not exceed torque of **1.5 INCH-POUNDS.**

1. **Install front panel (1).** Torque four bushings (3) to **1.5 INCH-POUNDS.** Torque screw (2) to **1.5 INCH-POUNDS.**
   a. Coat four bushings (3) with primer and seali1ng compound. Use primer (E11) and sealing compound (E93).
   b. Make sure amber filter (6) is in place in recess of three-digit driver (7).
   c. Position panel (1) on indicator case (5) and install four bushings (3). Torque to **1.5 INCH-POUNDS.** Use flat tip screwdriver bit.
   d. Install screw (2). Torque to **1.5 INCH-POUNDS.** Use crosstip screwdriver bit.
2. **Inspect (TI).**



END OF TASK

8-2-30. FUEL QUANTITY INDICATOR CIRCUIT CARD REPLACEMENT (AVIM) 8-2-30

This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Bar, Shunt, 4-inch	1005-01-241-4925
Strap, Grounding, Large	4240-01-165-8865
Extractor, Circuit Card	5120-00-758-6653

Materials/Parts:

(E32)	Cloth, Lint-Free
(E83)	Bag, Plastic

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
8-2-29	Fuel quantity indicator front panel removed

NOTE

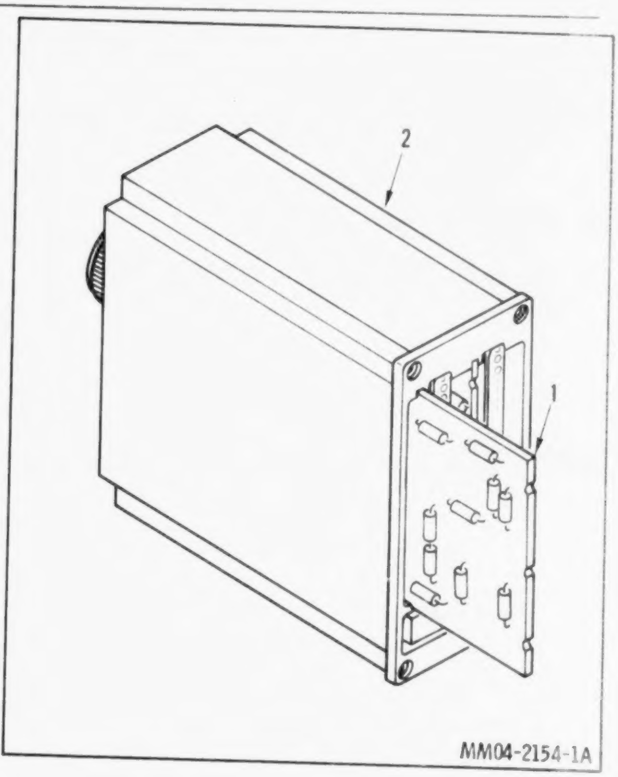
The following task is typical for all circuit cards in the engine/rotor rpm indicator.

CAUTION

Static electrical discharge can damage semiconductors in circuit card. To prevent damage, repairer must wear grounding strap when panel is off, and when handling circuit cards.

A. **REMOVAL**

1. **Remove circuit card (1) from indicator case (2).** Wear grounding strap. Use circuit card extractor.



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8-2-30. FUEL QUANTITY INDICATOR CIRCUIT CARD REPLACEMENT (AVIM) (cont) 8-2-30

NOTE

Step 2 is typical only for removal of dual fuel quantity interface voltmeter circuit card.

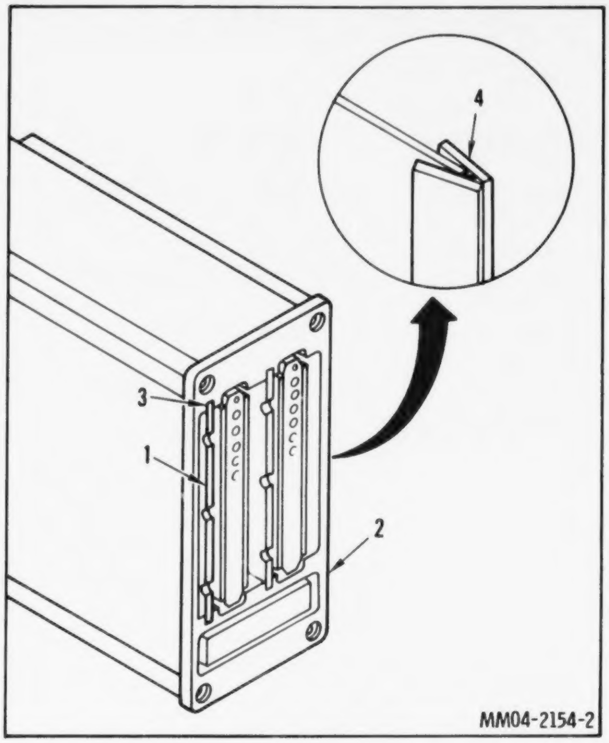
2. Install shunt bar (4). Place card (1) in plastic bag (E83).

B. CLEANING

Wipe guide slots with a clean lint-free cloth (E32).

C. INSTALLATION

1. Install circuit card (1) in indicator case (2).
   a. Insert circuit card (1) in guide slots (3).
   b. Push circuit card (1) until fully seated.
2. Inspect (TI).
3. Install front panel (para 8-2-29).



END OF TASK

8-2-31. VERTICAL DISPLAY LAMP BOARD REPLACEMENT (AVIM) 8-2-31

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Materials/Parts:

(E32)	Cloth, Lint-Free
(E93)	Compound, Sealing

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
8-2-22	Analog or interface circuit card and indicating light transmitting panel removed or
8-2-27	Engine oil pressure indicator circuit card removed

NOTE

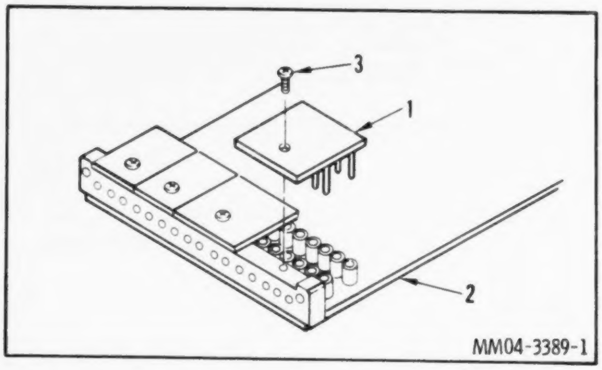
This task is typical for torque, TGT, fuel, and N_G lamp board.

A. REMOVAL

1. **Remove lamp board (1) from lamp block (2).**

   a. Remove retaining screw (3) from lamp board (1).

   b. Carefully pull lamp board (1) from lamp block (2).



B. CLEANING

Wipe lamp board with a clean lint-free cloth (E32).

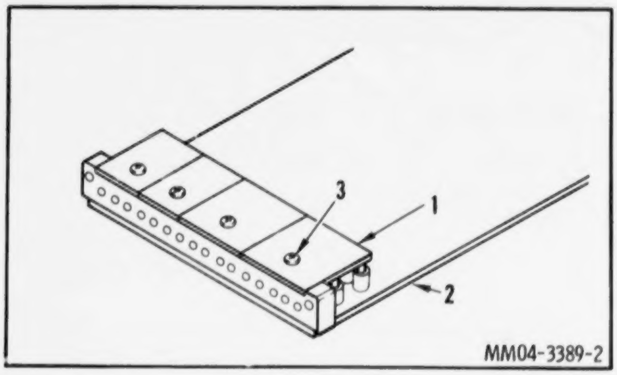
C. INSPECTION

Check lamp board for cracks, loose or broken pins, and broken lamp filaments. None allowed.

GO TO NEXT PAGE

D. INSTALLATION

1. **Install lamp board (1) on lamp block (2).**
   a. Aline board (1) on block (2).
   b. Press down on board (1) to seat on block (2).
   c. Install retaining screw (3). Use sealing compound (E93).



2. **Inspect (TI).**

3. **Install circuit card and indicating light transmitting panel** (para 8-2-22 or 8-2-27).

END OF TASK

SECTION III. FLIGHT INSTRUMENTS MAINTENANCE

8-3-1. FLIGHT INSTRUMENT INSPECTION

Personnel Required:

66R30 Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors, covers, panels, and fairings removed as necessary

1. Check flight instruments and instrument panel mounting areas for dents, nicks, and cracks.
2. Check front panels of instruments for dents, nicks, and cracks.
3. Check instruments and their front panels, covers, switches, pointers, and knobs for loose installation.
4. Check instruments for loose or missing hardware.
5. Check pointers on instrument faces for wear and damage.
6. Check instrument scales for wear, illegibility, distortion, and discoloration.
7. Check electrical connectors for secure installation. Inspect lock-wiring for loose or broken wires.
8. Check instruments for fogging and moisture.
9. Secure opened doors, covers, panels and fairings.

END OF TASK

8-3-2. PILOT/CPG AIRSPEED INDICATOR REMOVAL/INSTALLATION 8-3-2

This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Wrench, 7/8 & 15/16, Open-end	5120-00-187-7131
Wrench, 5/8 & 11/16, Open-end	5120-00-277-8301

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

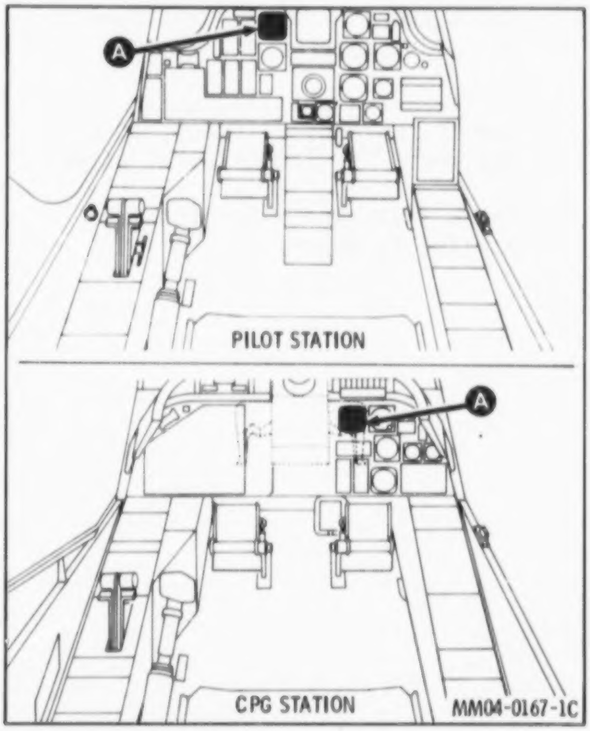
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot/CPG station (para 1-7-1). Observe all safety precautions



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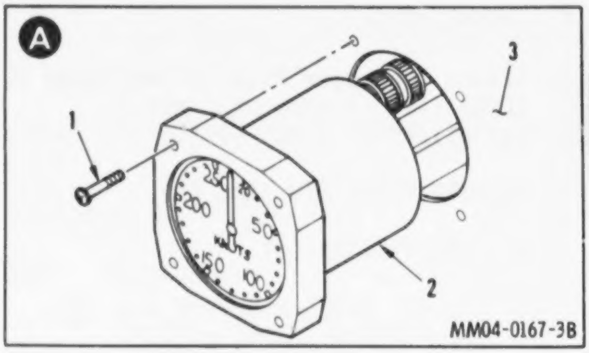
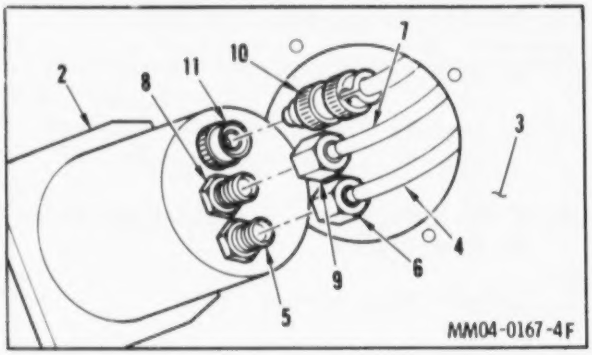
8-3-2. PILOT/CPG AIRSPEED INDICATOR REMOVAL/INSTALLATION (cont) 8-3-2

2. Remove four screws (1) from airspeed indicator (2).





3. Lift airspeed indicator (2) clear of instrument panel (3).

4. Disconnect STATIC AIR line (4) from static fitting (5).

   a. Hold fitting (5). Use 15/16 open-end wrench.

   b. Remove STATIC AIR line nut (6). Use 11/16 open-end wrench.

5. Disconnect PITOT AIR line (7).

   a. Hold pitot fitting (8). Use 11/16 open-end wrench.

   b. Remove PITOT AIR line nut (9).

6. Detach connector P119 (pilot)/P125 (CPG) (10) from connector M19J1 (pilot)/M24J1 (CPG) (11).

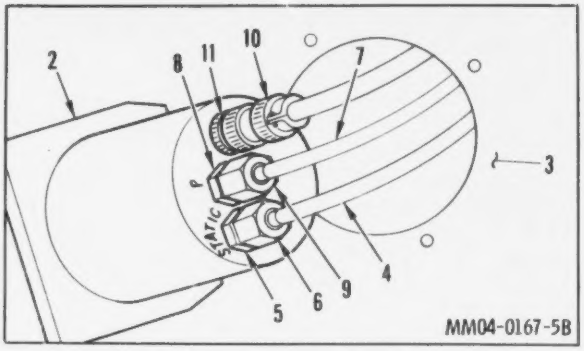
B. CLEANING

Wipe airspeed indicator and mounting area with a clean rag.

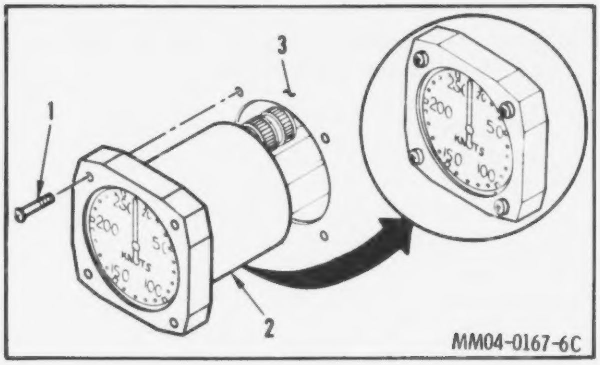
GO TO NEXT PAGE

8-3-2. PILOT/CPG AIRSPEED INDICATOR REMOVAL/INSTALLATION (cont) 8-3-2

C. INSTALLATION



MM04-0167-5B



MM04-0167-6C

1. **Attach connector P119 (pilot)/P125 (CPG) (10) to connector M19J1 (pilot)/M24J1 (CPG) (11).**
2. **Install PITOT AIR line (7).**
   a. Hold fitting (8).
   b. Install PITOT AIR line nut (9). Use 11/16 open-end wrench.
3. **Install STATIC AIR line (4).**
   a. Hold fitting (5).
   b. Install STATIC AIR line nut (6). Use 15/16 open-end wrench.
4. **Aline indicator (2) with screw holes in panel (3).**
5. **Install four screws (1).**
6. **Inspect (TI).**
7. **Perform flight instruments operational check (TM 55-1520-238-T).**

END OF TASK

8-3-3. RIGHT OR LEFT WING PITOT TUBE REMOVAL/INSTALLATION 8-3-3

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

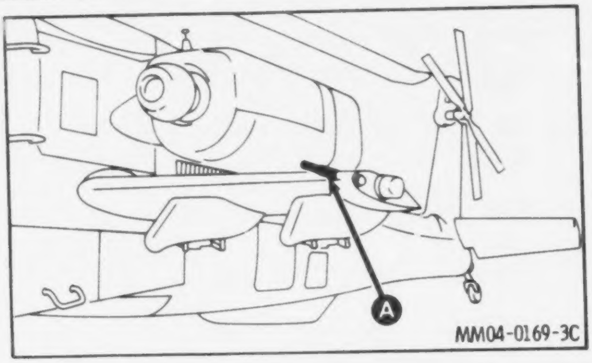
68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

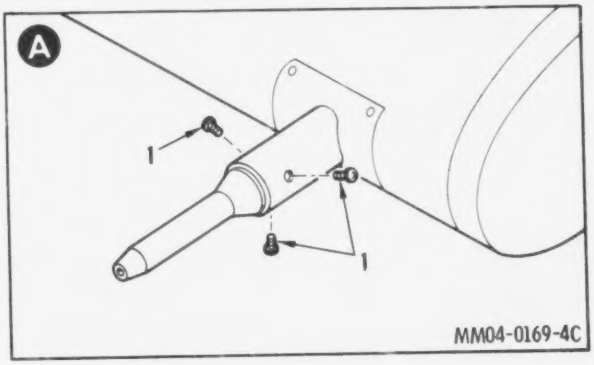
Ref	Condition
1-7-2	Helicopter safed
1-7-5	Pitot head protective cover removed



MM04-0169-3C

A. REMOVAL

1. Remove three screws (1).



MM04-0169-4C

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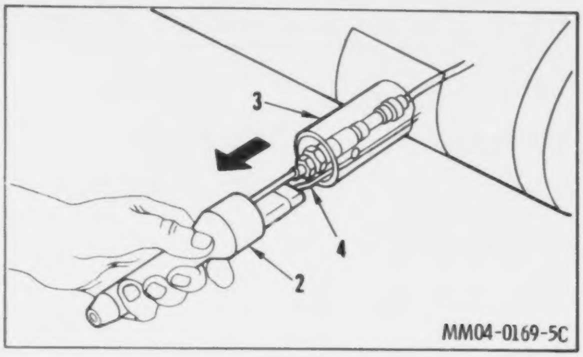
8-3-3. RIGHT OR LEFT WING PITOT TUBE REMOVAL/INSTALLATION (cont) 8-3-3

2. Pull pitot tube (2) from housing (3) until pitot line fitting (4) is clear of housing (3).

3. Detach connector P1010 (right wing)/P208 (left wing) (5) from socket HR8 (right wing)/HR6 (left wing) (6).

4. Disconnect pitot line fitting (7) from pitot tube fitting (8).



MM04-0169-5C

B. INSTALLATION

1. Connect fitting (7) to fitting (8).

2. Attach connector P1010 (right wing)/P208 (left wing) (5) to socket HR8 (right wing)/HR6 (left wing) (6).

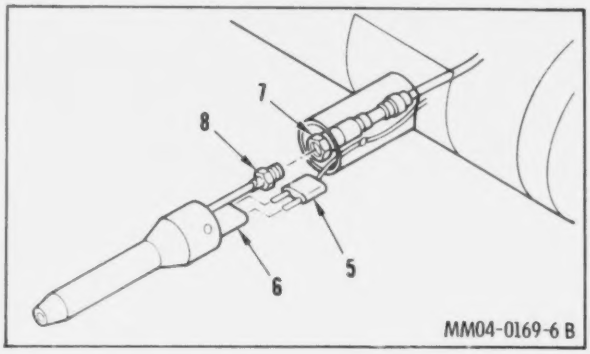
3. Insert tube (2) into housing (3). Gently push tube (2) into housing (3).

4. Install three screws (1).

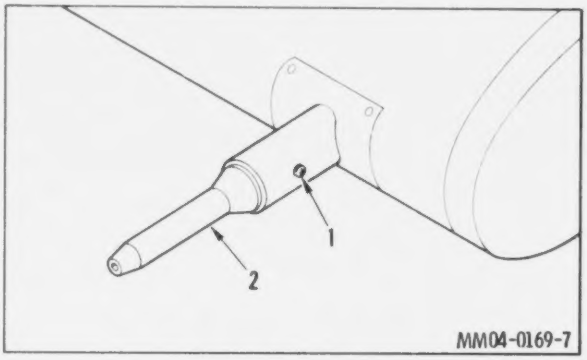
5. Inspect (TI).

6. Perform flight instruments operational check (TM 55-1520-238-T).

7. Install pitot head protective cover (para 1-7-4).



MM04-0169-6 B



MM04-0169-7

END OF TASK

8-3-4. PILOT/CPG BAROMETRIC ALTIMETER REMOVAL/INSTALLATION

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

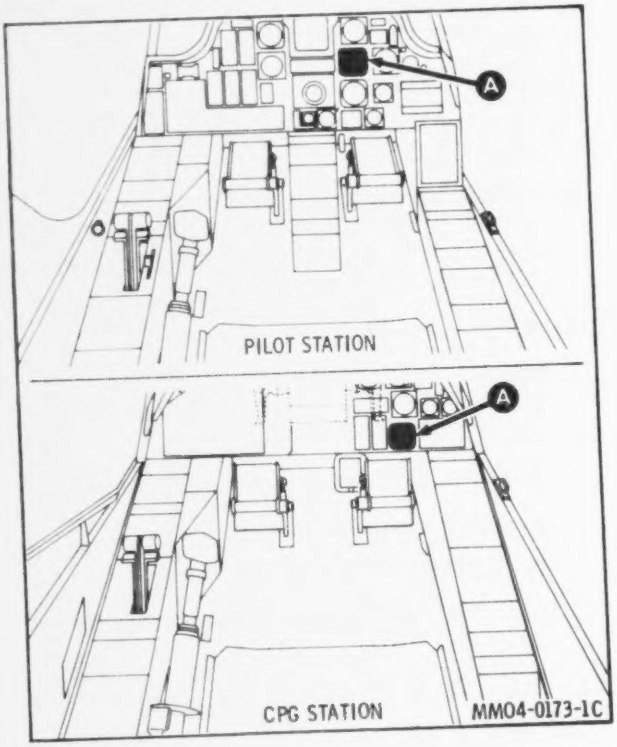
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot/CPG station (para 1-7-1). Observe all safety precautions.



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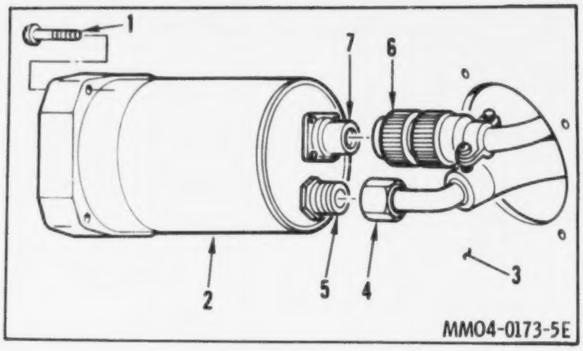
8-3-4. PILOT/CPG BAROMETRIC ALTIMETER REMOVAL/INSTALLATION (cont) 8-3-4

2. Remove three screws (1).
3. Lift barometric altimeter (2) clear of instrument panel (3).
4. Disconnect fitting (4) from adapter (5).
   a. Hold adapter (5).
   b. Disconnect fitting (4).
5. Detach connector P382 (pilot)/P385 (CPG) (6) from connector M301J1 (pilot)/M305J1 (CPG) (7).



MM04-0173-5E

B. CLEANING

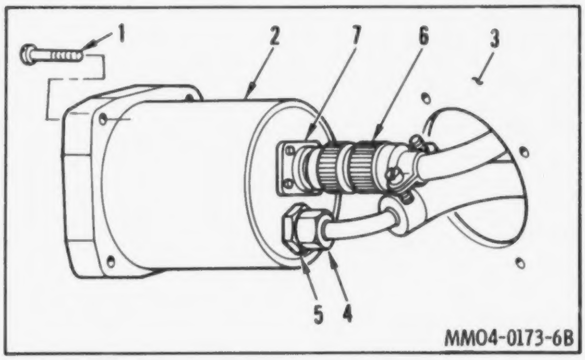
Wipe mounting area and altimeter with a clean rag.

C. INSPECTION

1. Check altimeter for cracks, nicks, and dents (para 8-3-1).
2. Check screw holes of instrument panel for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.

D. INSTALLATION

1. Attach connector P382 (pilot)/P385 (CPG) (6) to connector M301J1 (pilot)/M305J1 (CPG) (7).
2. Connect fitting (4) to adapter (5).
   a. Hold adapter (5).
   b. Connect fitting (4).
3. Aline altimeter (2) with screw holes in panel (3).
4. Install three screws (1).
5. Inspect (TI).
6. Perform flight instrument operational check (TM 55-1520-238-T).



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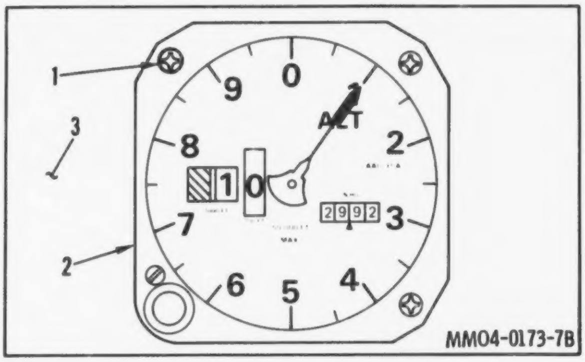


MM04-0173-7B

END OF TASK

8-3-5. PILOT/CPG VERTICAL VELOCITY INDICATOR REMOVAL/INSTALLATION 8-3-5

This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Wrench, 11/16, Box & Open-end	5120-00-895-9572
Wrench, 15/16, Box & Open-End	5120-00-895-9575

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

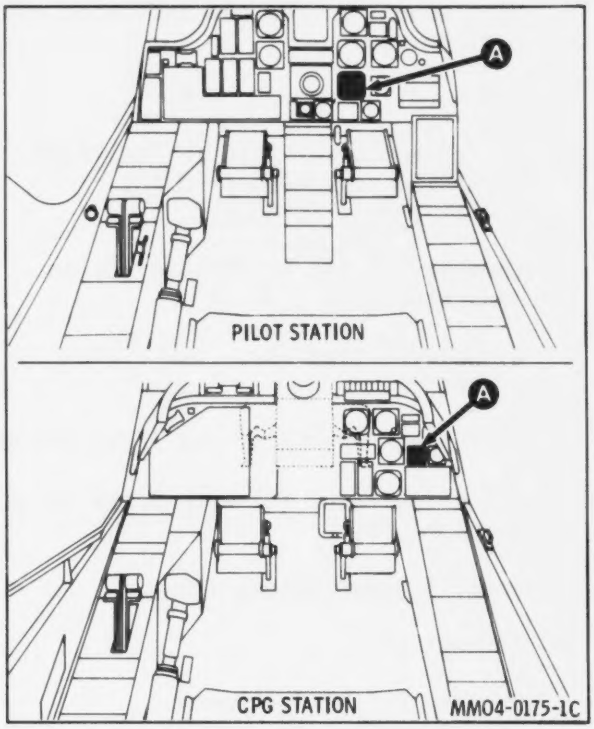
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot/CPG station (para 1-7-1). Observe all safety precautions.



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8-3-5. PILOT/CPG VERTICAL VELOCITY INDICATOR REMOVAL/INSTALLATION (cont) 8-3-5

2. Remove three screws (1).
3. Lift vertical velocity indicator (2) clear of instrument panel (3).
4. Disconnect nut (4) from fitting (5).
   a. Hold fitting (5). Use 11/16 wrench.
   b. Disconnect nut (4). Use 15/16 wrench.
5. Detach connector P126 (pilot)/P120 (CPG) (6) from connector M25J1 (pilot)/M20J1 (CPG) (7).

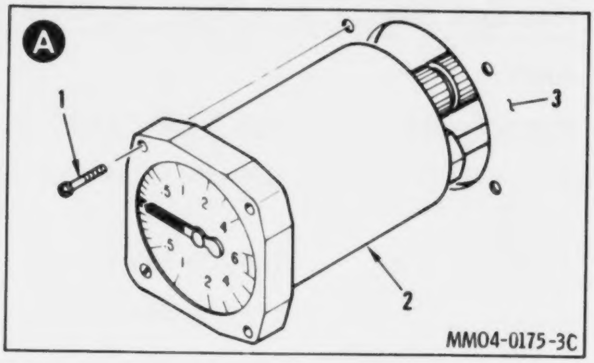
B. CLEANING

Wipe mounting area and indicator with a clean rag.

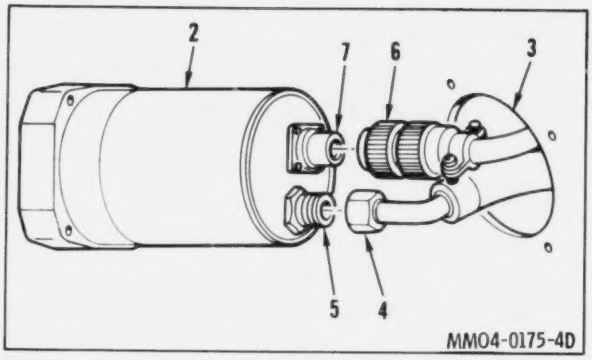
C. INSTALLATION

1. Attach connector P126 (pilot)/P120 (CPG) (6) to connector M25J1 (pilot)/M20J1 (CPG) (7).
2. Connect nut (4) to fitting (5) on indicator (2).
   a. Hold fitting (5). Use 11/16 wrench.
   b. Connect nut (4). Use 15/16 wrench.
3. Aline indicator (4) with screw holes in panel (3).
4. Install three screws (1).
5. Inspect (TI).
6. Perform flight instrument operational check (TM 55-1520-238-T).

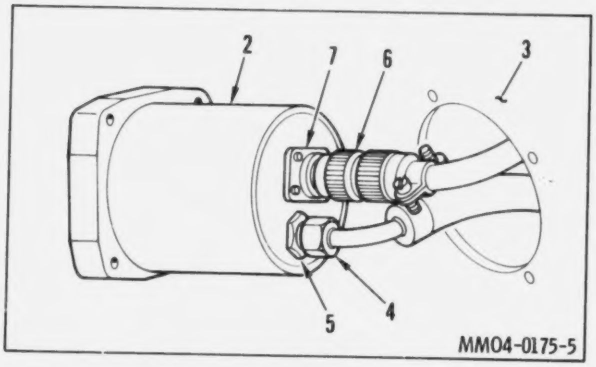
END OF TASK



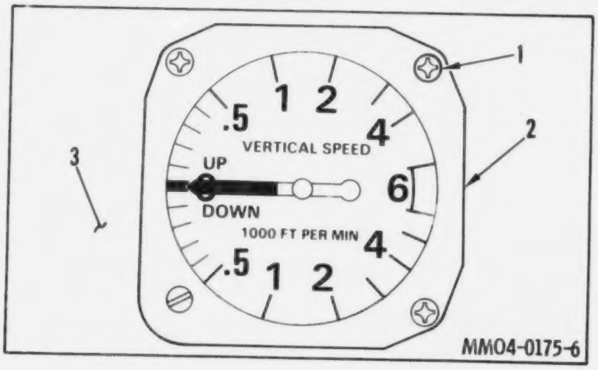
MM04-0175-3C



MM04-0175-4D



MM04-0175-5



MM04-0175-6

8-3-6. ACCELEROMETER REMOVAL/INSTALLATION 8-3-6

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

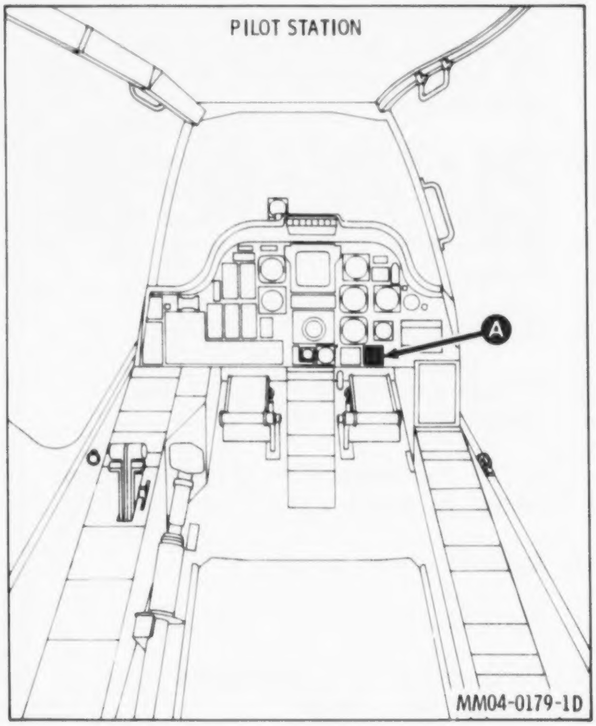
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.



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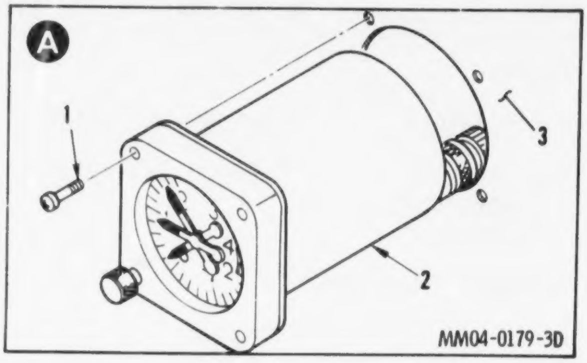
8-3-6. ACCELEROMETER REMOVAL/INSTALLATION (cont) 8-3-6

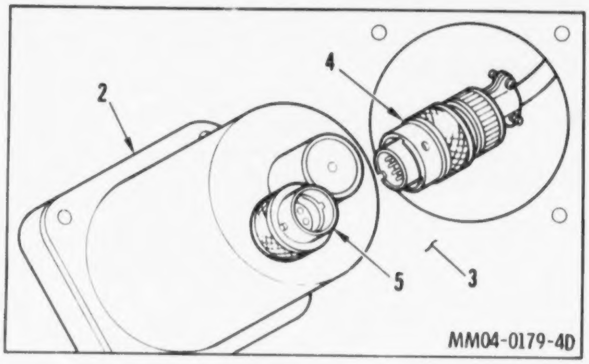
2. Remove three screws (1).
3. Lift accelerometer (2) clear of instrument panel (3).
4. Detach connector P123 (4) from connector M22J1 (5).



MM04-0179-3D

B. CLEANING

Wipe mounting area and accelerometer with a clean rag.



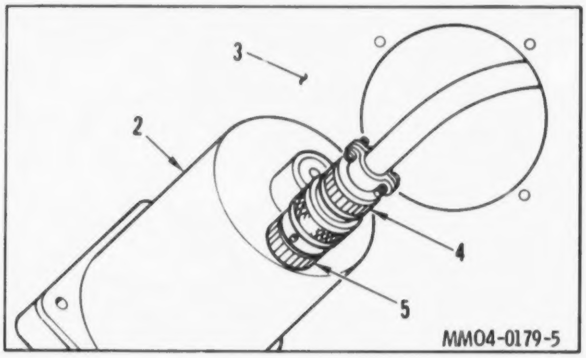
MM04-0179-4D

C. INSPECTION

1. Check accelerometer and instrument panel mounting area for cracks, nicks, and dents. None allowed.
2. Check accelerometer and screw holes for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.

D. INSTALLATION

1. Attach connector P123 (4) to connector M22J1 (5).
2. Aline accelerometer (2) with screw holes in panel (3).
3. Install three screws (1).
4. Inspect (TI).
5. Perform flight instruments operational check (TM 55-1520-238-T).



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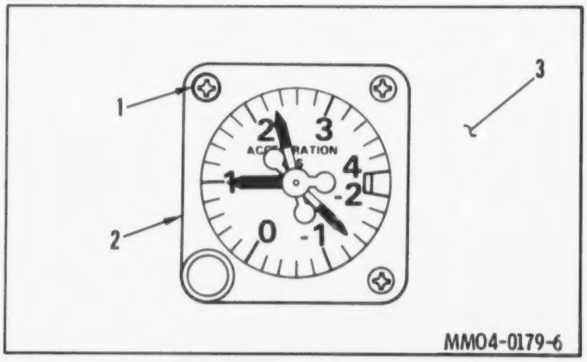


MM04-0179-6

END OF TASK

8-3-7. STANDBY ATTITUDE INDICATOR REMOVAL/INSTALLATION 8-3-7

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

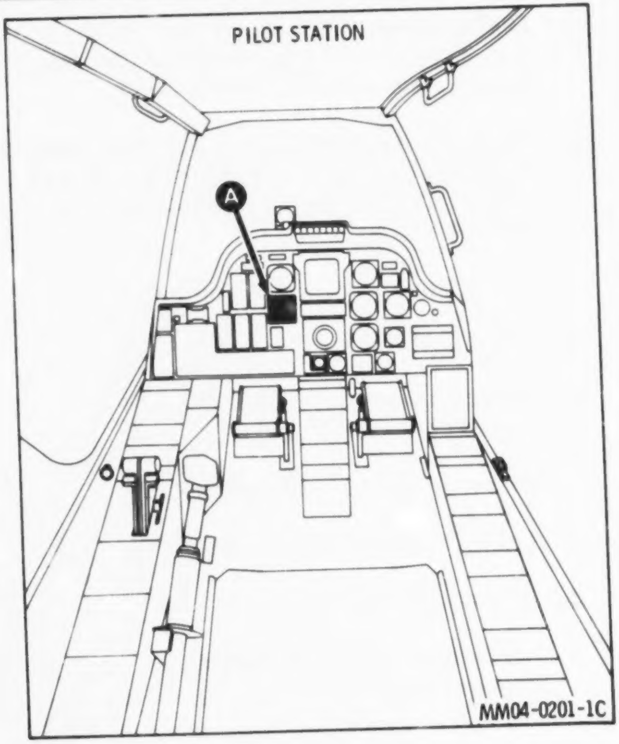
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.



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8-3-7. STANDBY ATTITUDE INDICATOR REMOVAL/INSTALLATION (cont) 8-3-7

2. Remove three screws (1).
3. Lift standby attitude indicator (2) instrument panel (3).
4. Detach connector P383 (4) from connector M302J1 (5).

B. CLEANING

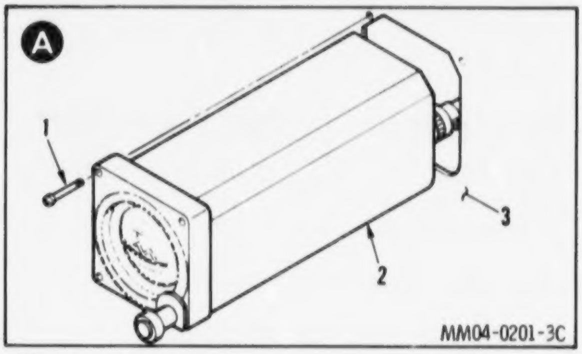
Wipe mounting area and indicator with a clean rag.

C. INSPECTION

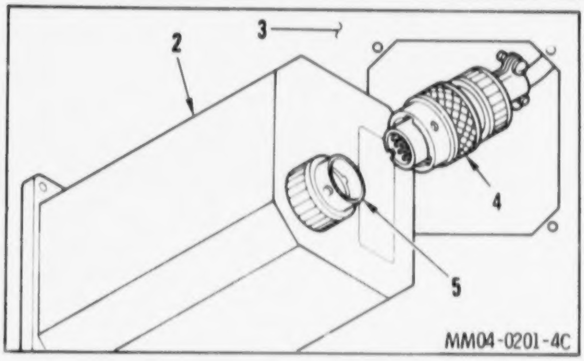
1. Check standby attitude indicator and panel mounting area for cracks, nicks, and dents (para 8-3-1).
2. Check instrument panel for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.

D. INSTALLATION

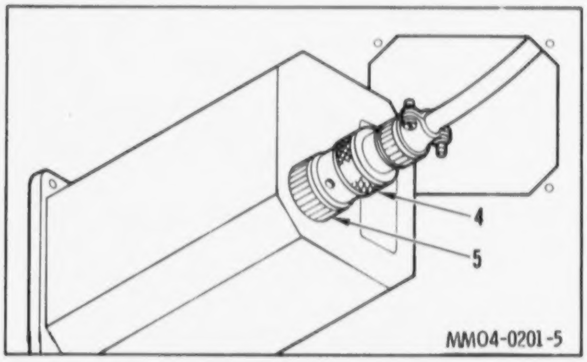
1. Attach connector P383 (4) to connector M302J1 (5).
2. Aline indicator (2) panel (3).
3. Install three screws (1).
4. Inspect (TI).
5. Perform flight instrument operational check (TM 55-1520-238-T).



MM04-0201-3C



MM04-0201-4C



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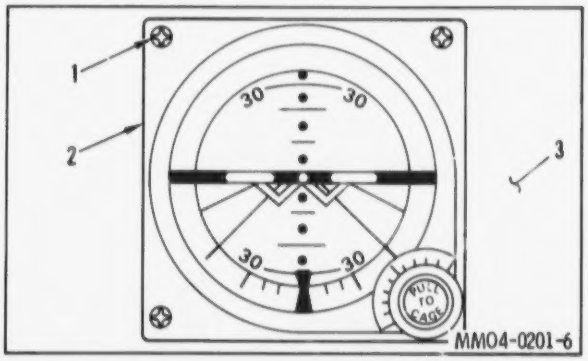


MM04-0201-6

END OF TASK

8-3-8. REMOTE ATTITUDE INDICATOR REMOVAL/INSTALLATION 8-3-8

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T

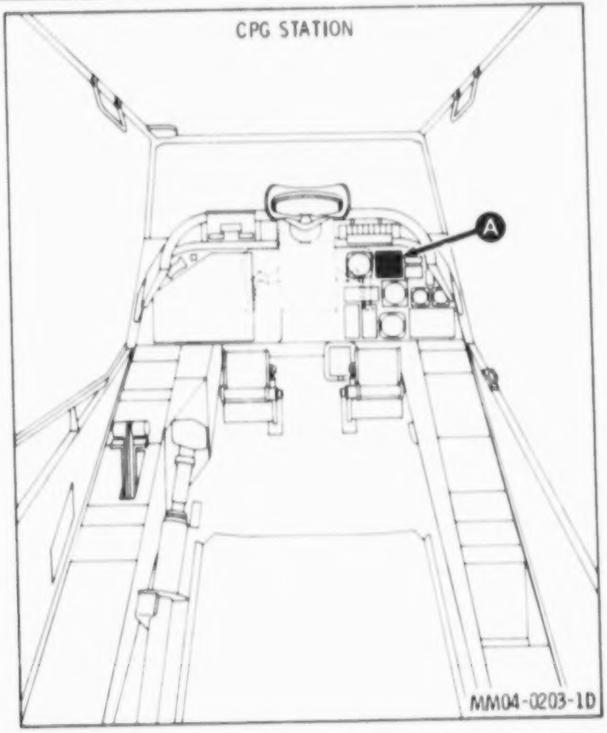
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

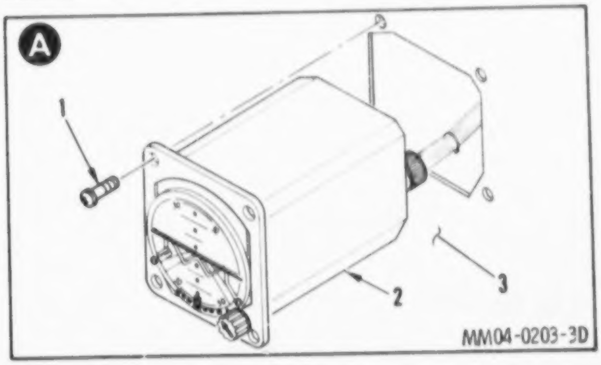
A. REMOVAL

1. Enter CPG station (para 1-7-1). Observe all safety precautions.

2. Open ATTD IND circuit breaker on CPG circuit breaker panel.



3. Remove four screws (1).



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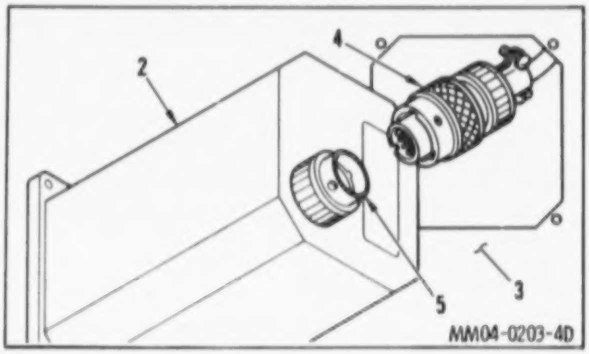
8-3-8. REMOTE ATTITUDE INDICATOR REMOVAL/INSTALLATION (cont) 8-3-8

4. Lift remote attitude indicator (2) clear of instrument panel (3).

5. Detach connector P275 (4) from connector M30J1 (5).



B. CLEANING

Wipe mounting area and indicator with a clean rag.

C. INSPECTION

1. Check remote attitude indicator for cracks, nicks, and dents. None allowed.

2. Check screw holes of remote attitude indicator for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.

D. INSTALLATION

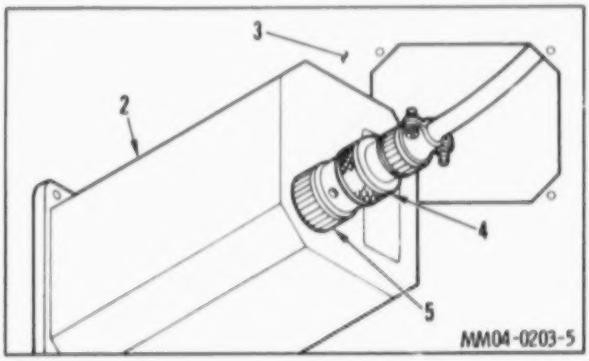
1. Attach connector P275 (4) to connector M30J1 (5).

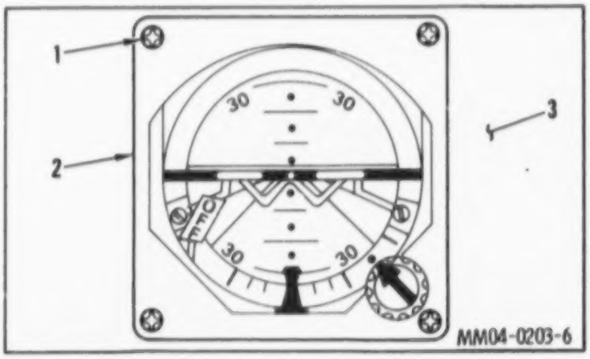
2. Aline indicator (2) with screw holes in panel (3).

3. Install four screws (1).

4. Inspect (TI).

5. Perform navigation instruments operational check (TM 55-1520-238-T).





END OF TASK

SECTION IV. NAVIGATION INSTRUMENTS MAINTENANCE

8-4-1. NAVIGATION INSTRUMENT INSPECTION

Personnel Required:

66R30 Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors, covers, panels, and fairings removed as necessary

1. Check navigation instruments and instrument panel mounting areas for dents, nicks, and cracks.
2. Check front panels of instruments for dents, nicks, and cracks.
3. Check instruments and their front panels, covers, indicators, switches, and knobs for loose installation.
4. Check instruments for loose or missing hardware.
5. Check indicators on instrument faces for wear and damage.
6. Check instrument scales for wear, readability, distortion, and discoloration.
7. Check electrical connectors for loose installation.
8. Check lockwiring for loose or broken wires.
9. Check instruments for fogging and moisture.
10. Install opened access doors, covers, panels, and fairings.

END OF TASK

8-4-2. PILOT MAGNETIC COMPASS REMOVAL/INSTALLATION 8-4-2

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

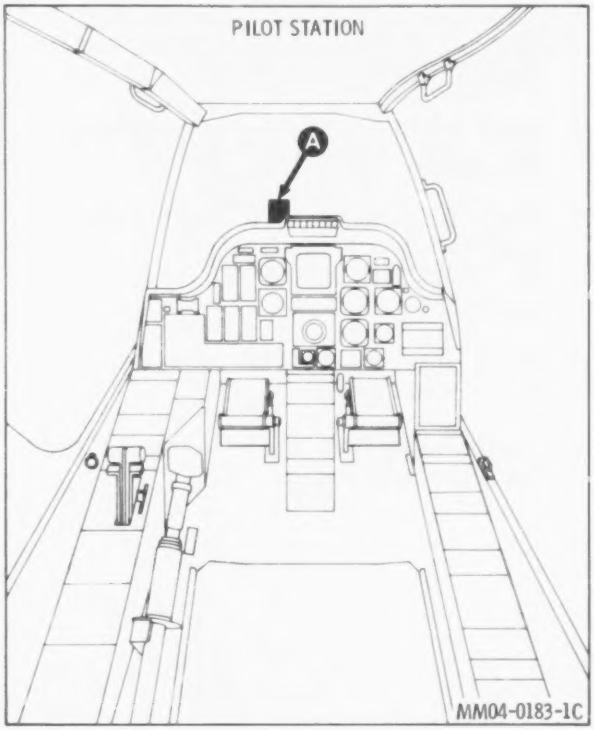
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.



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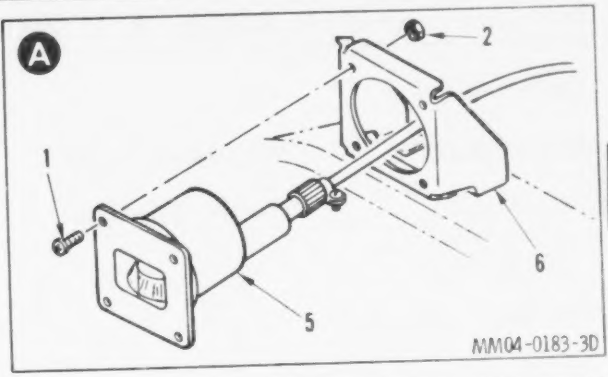
8-4-2. PILOT MAGNETIC COMPASS REMOVAL/INSTALLATION (cont)

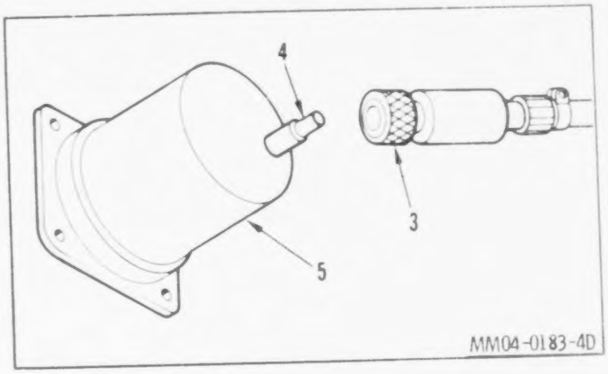
2. Remove four screws (1) and four nuts (2).
3. Detach connector P122 (3) from magnetic compass connector M23J1 (4).
4. Pull magnetic compass (5) clear of mounting bracket (6).



MM04-0183-3D

B. CLEANING

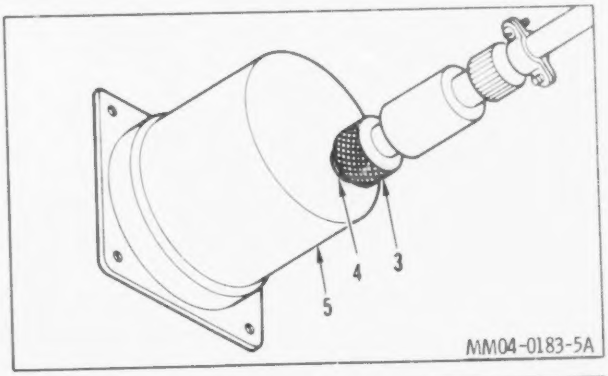
Wipe mounting bracket and compass with a clean rag.



MM04-0183-4D

C. INSPECTION

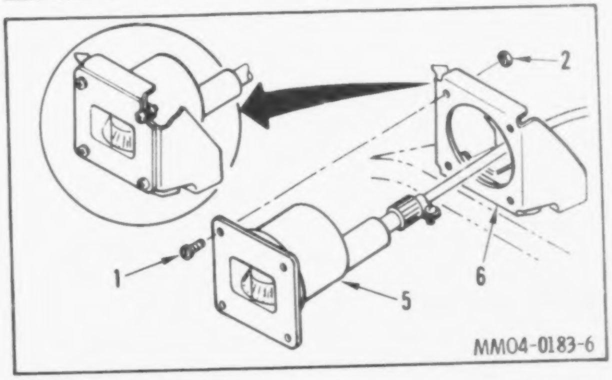
1. Check magnetic compass and mounting bracket for cracks, nicks, and dents. None allowed.
2. Check screw holes of magnetic compass and mounting bracket for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.



MM04-0183-5A

D. INSTALLATION

1. Position magnetic compass (5) in mounting bracket (6). Aline face of magnetic compass (5) with screw holes of mounting bracket (6).
2. Install four screws (1) and four nuts (2).
3. Attach connector P122 (3) to connector M23J1 (4).
4. Inspect (TI).
5. Perform flight instruments operational check (TM 55-1520-238-T).



MM04-0183-6

END OF TASK

8-4-3. HORIZONTAL SITUATION INDICATOR REMOVAL/INSTALLATION 8-4-3

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electronic Equipment	5180-00-064-5178

Personnel Required:

35K10 Avionic Mechanic
66R30 Inspector/Supervisor

References:

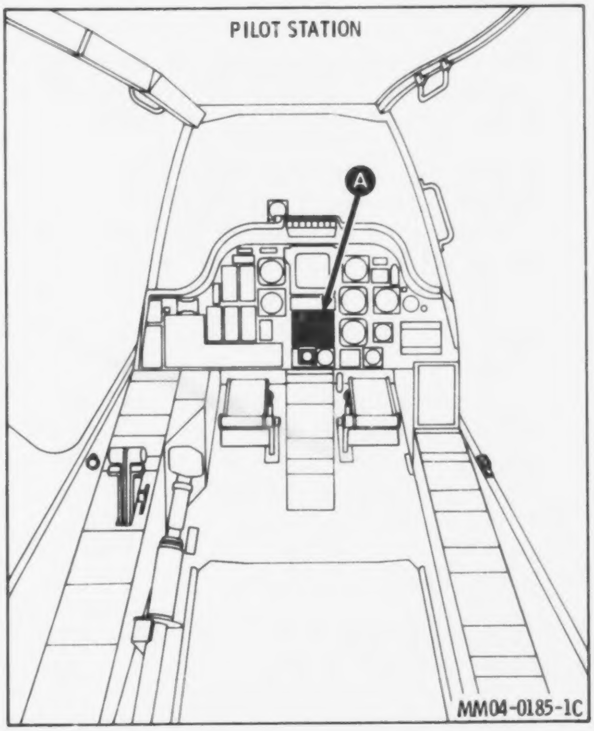
TM 11-1520-238-23-2

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.



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8-4-3. HORIZONTAL SITUATION INDICATOR REMOVAL/INSTALLATION (cont)

2. Open HSI circuit breaker on pilot forward circuit breaker panel.

3. Remove four screws (1).

4. Lift indicator (2) clear of panel (3).

5. Detach connector P323 (4) from connector M303J1 (5).

B. CLEANING

Wipe mounting area and indicator with a clean rag.

C. INSPECTION

1. Check indicator and panel for cracks, nicks, or dents. None allowed.

2. Check screw holes of indicator and panel for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.

D. INSTALLATION

1. Attach connector P323 (4) to connector M303J1 (5).

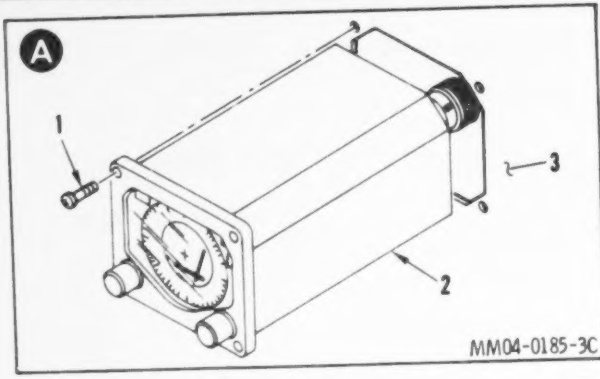
2. Aline indicator (2) with screw holes in panel (3).

3. Install four screws (1).

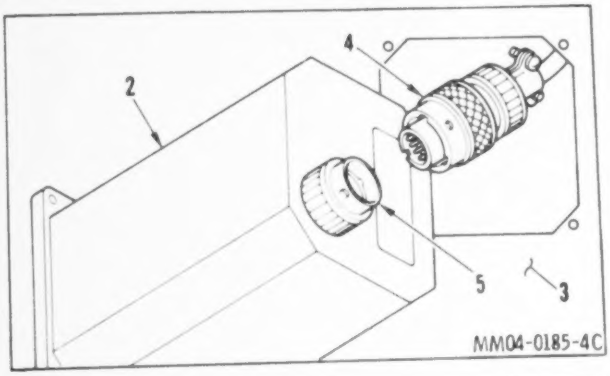
4. Inspect (TI).

5. Perform navigation instruments operational check (TM 11-1520-238-23-2).

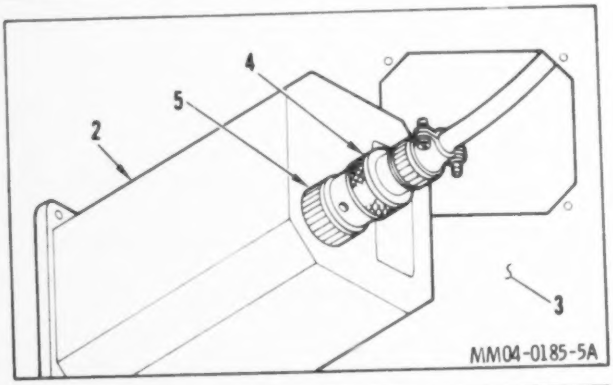
END OF TASK



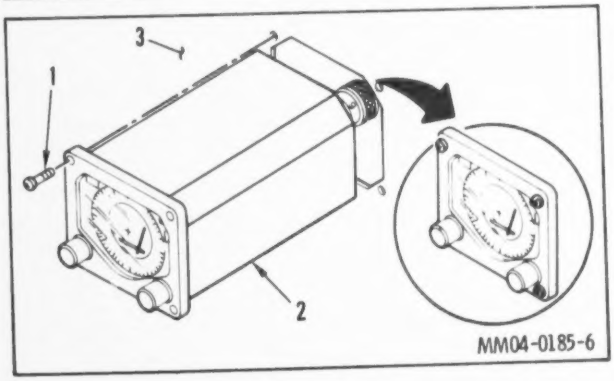
MM04-0185-3C



MM04-0185-4C



MM04-0185-5A



MM04-0185-6

8-4-4. CPG RADIO MAGNETIC INDICATOR REMOVAL/INSTALLATION 8-4-4

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

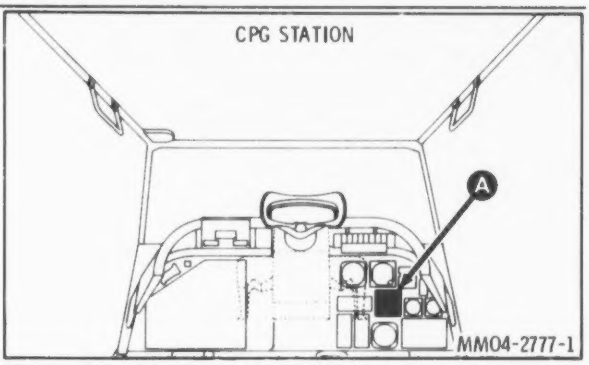
68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 11-1520-238-23-2

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed



A. REMOVAL

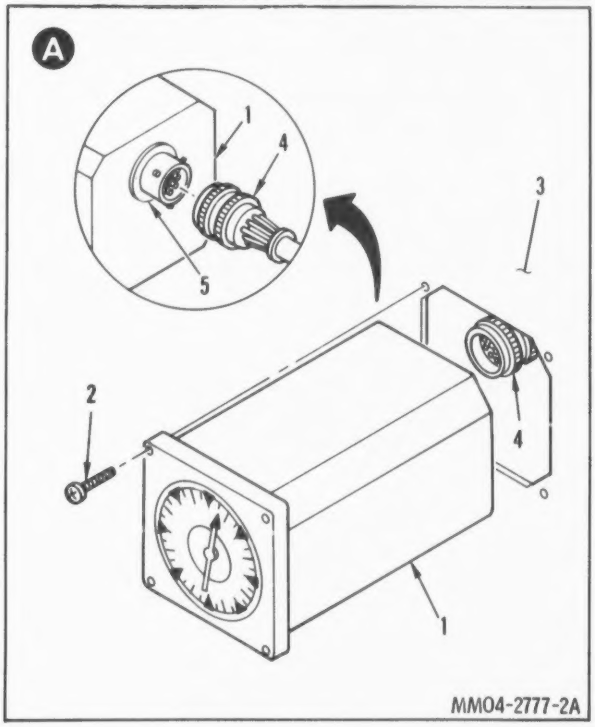
1. Enter CPG station (para 1-7-1). Observe all safety precautions.

2. Remove radio magnetic indicator (1).

   a. Remove four screws (2).

   b. Pull indicator (1) away from instrument panel (3) far enough to detach connector P351 (4).

   c. Detach connector P351 (4) from connector M313J1 (5).



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8-4-4. CPG RADIO MAGNETIC INDICATOR REMOVAL/INSTALLATION (cont) 8-4-4

B. CLEANING

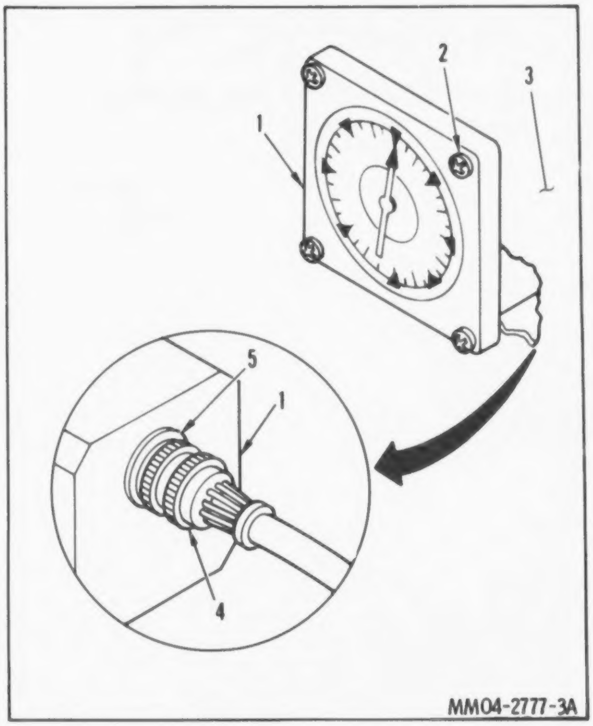
Wipe mounting area and indicator with a clean rag.

C. INSPECTION

1. Check mounting surfaces of radio magnetic indicator and instrument panel for cracks, nicks, and dents. None allowed.
2. Check radio magnetic indicator and instruent panel for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.

D. INSTALLATION

1. Install radio magnetic indicator (1).
   a. Attach connector P351 (4) to connector M313J1 (5).
   b. Insert indicator (1) into mounting area of instrument panel (3).
   c. Install four screws (2).
2. Inspect (TI).
3. Perform navigation instruments operational check (TM 11-1520-238-23-2).



END OF TASK

SECTION V. MISCELLANEOUS INSTRUMENTS MAINTENANCE

8-5-1. MISCELLANEOUS INSTRUMENTS INSPECTION 8-5-1

Personnel Required:

66R30 Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors, covers, panels, and fairings removed as necessary

1. Check miscellaneous instruments and instrument panel mounting areas for dents, nicks, and cracks.

2. Check front panels of instruments for dents, nicks, and cracks.

3. Check instruments and their front panels, covers, indicators, switches, and knobs for loose installation.

4. Check instruments for loose or missing hardware.

5. Check indicators on instrument faces for wear and damage.

6. Check instrument scales for wear, readability, distortion, and discoloration.

7. Check electrical connectors for loose installation. Inspect lock-wiring for loose or broken wires.

8. Check instruments for fogging and moisture.

9. Secure opened doors, covers, panels, and fairings.

END OF TASK

8-5-2. HYDRAULIC PRESSURE INDICATOR REMOVAL/INSTALLATION 8-5-2

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

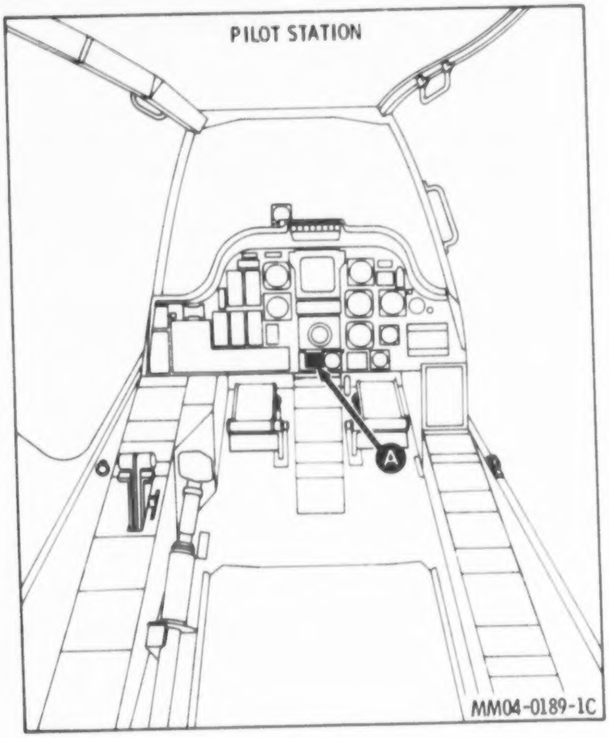
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.



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8-5-2. HYDRAULIC PRESSURE INDICATOR REMOVAL/INSTALLATION (cont) 8-5-2

2. Remove four screws (1).
3. Lift hydraulic pressure indicator (2) clear of instrument panel (3).
4. Detach connector P746 (4) from connector M29J1 (5).

B. CLEANING

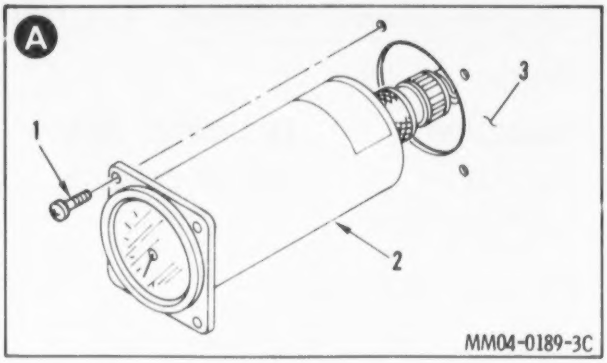
Wipe mounting area and indicator with a clean rag.

C. INSPECTION

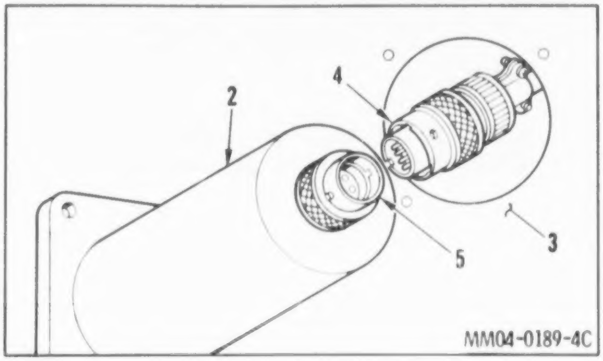
1. Check indicator and panel mounting area for cracks, nicks, and dents. None allowed.
2. Check indicator and panel screw holes for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.

D. INSTALLATION

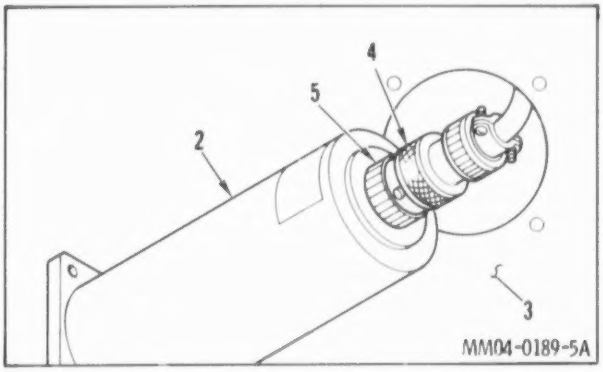
1. Attach connector P746 (4) to connector M29J1 (5).
2. Aline indicator (2) and panel (3) screw holes.
3. Install four screws (1).
4. Inspect (TI).
5. Perform utility hydraulic operational check (TM 55-1520-238-T).



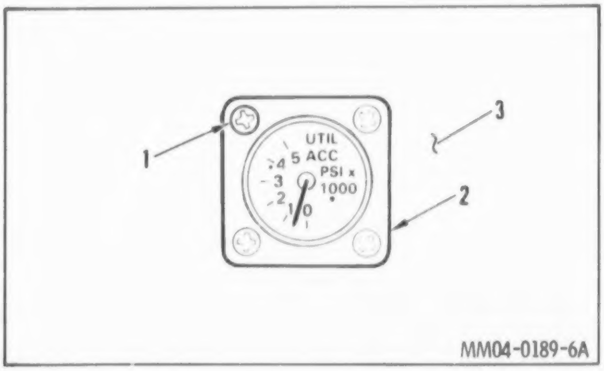
MM04-0189-3C



MM04-0189-4C



MM04-0189-5A



MM04-0189-6A

END OF TASK

8-5-3. DUAL HYDRAULIC PRESSURE INDICATOR REMOVAL/INSTALLATION 8-5-3

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

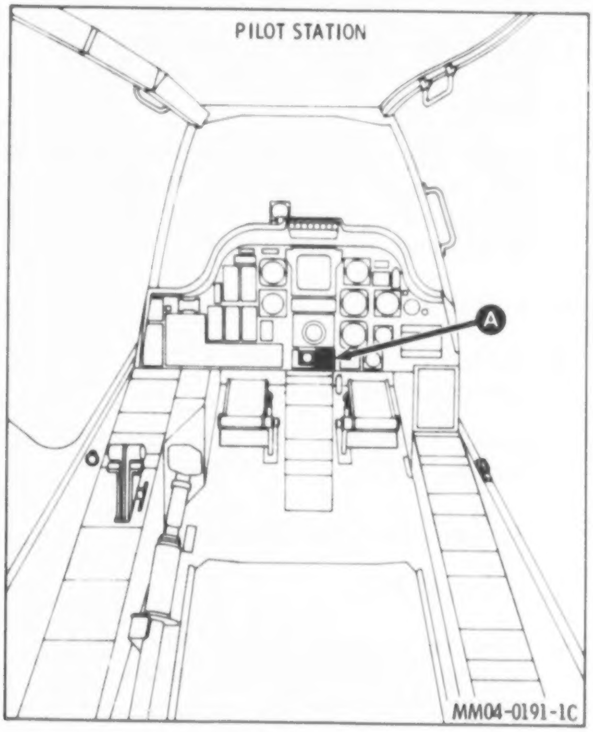
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.



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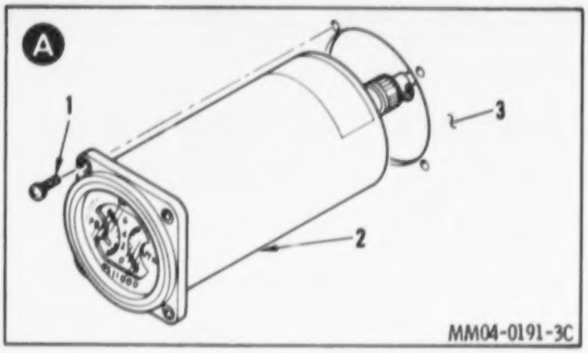
8-5-3. DUAL HYDRAULIC PRESSURE INDICATOR REMOVAL/INSTALLATION (cont) 8-5-3

2. Remove four screws (1).

3. Lift dual hydraulic pressure indicator (2) clear of instrument panel (3).

4. Detach connector P265 (4) from connector M28J1 (5).



MM04-0191-3C

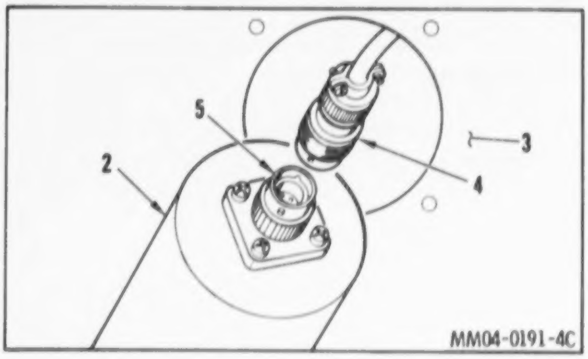
B. CLEANING

Wipe mounting area and indicator panel with a clean rag.

C. INSPECTION

1. Check indicator and panel mounting area for cracks, nicks, and dents. None allowed.

2. Check indicator and panel screw holes for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.



MM04-0191-4C

D. INSTALLATION

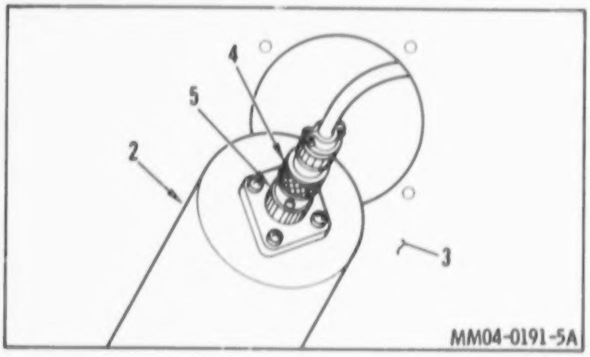
1. Attach connector P265 (4) to connector M28J1 (5).

2. Aline indicator (2) with screw holes in panel (3).

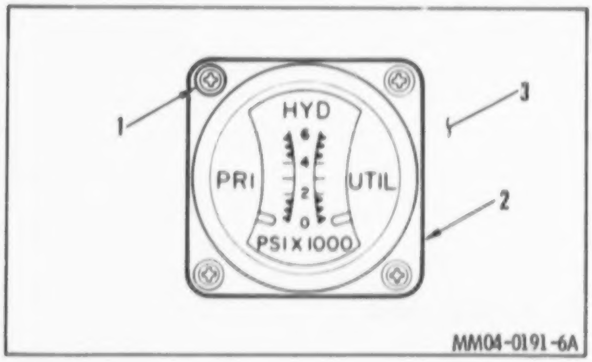
3. Install four screws (1).

4. Inspect (TI).

5. Perform primary or utility hydraulic operational check (TM 55-1520-238-T).



MM04-0191-5A



MM04-0191-6A

END OF TASK

8-5-4. PILOT/CPG CLOCK REMOVAL/INSTALLATION 8-5-4

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

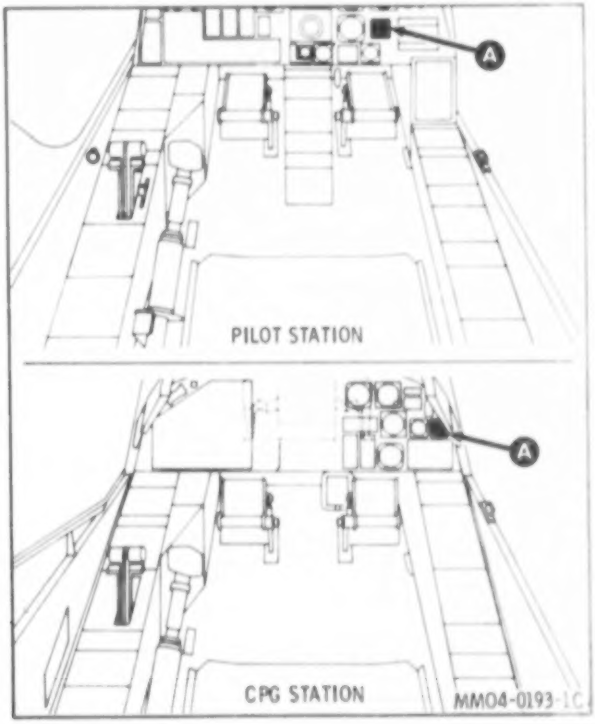
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot/CPG station (para 1-7-1). Observe all safety precautions.



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8-5-4. PILOT/CPG CLOCK REMOVAL/INSTALLATION (cont) 8-5-4

2. Remove two screws (1).

3. Lift pilot/CPG clock (2) clear of instrument panel (3).

4. Detach connector P121 (pilot)/P127 (CPG) (4) from connector M21J1 (pilot)/M49J1 (CPG) (5).

B. CLEANING

Wipe mounting area and clock with a clean rag.

C. INSPECTION

1. Check clock and panel mounting area for cracks, nicks, and dents. None allowed.

2. Check clock and panel screw holes for stripped or damaged threads. Acceptable thread damage cannot exceed 50 percent of one thread.

D. INSTALLATION

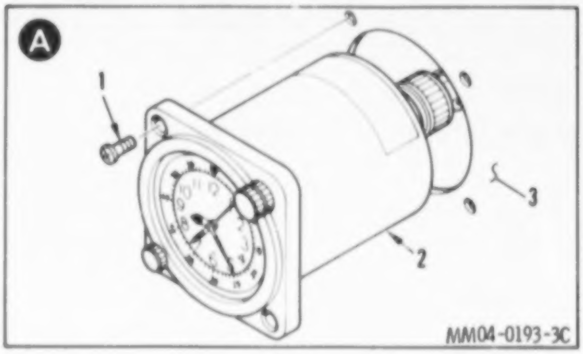
1. Attach connector P121 (pilot)/P127 (CPG) (4) to connector M21J1 (pilot/M49J1 (CPG) (5).

2. Aline clock (2) with screw holes in panel (3).

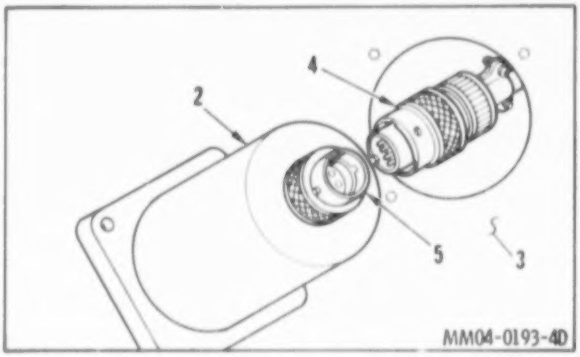
3. Install two screws (1).

4. Inspect (TI).

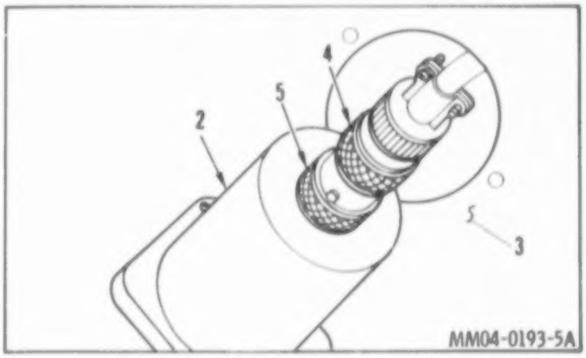
5. Perform miscellaneous instruments operational check (TM 55-1520-238-T).



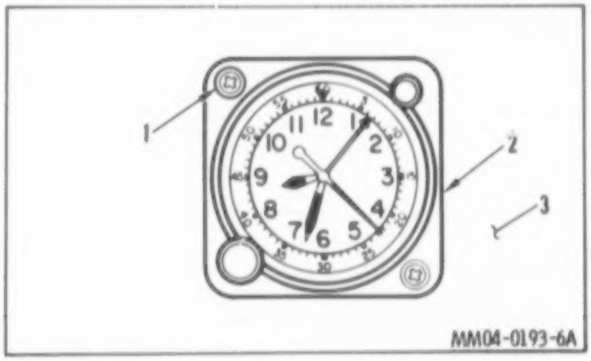
MM04-0193-3C



MM04-0193-4D



MM04-0193-5A



MM04-0193-6A

END OF TASK

8-5-5. OUTSIDE AIR TEMPERATURE INDICATOR REMOVAL/INSTALLATION 8-5-5

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician (2)
One to assist
66R30 Inspector/Supervisor

References:

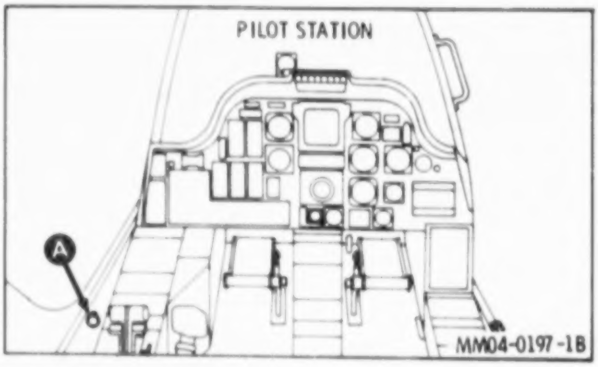
TM 55-1500-204-25/1

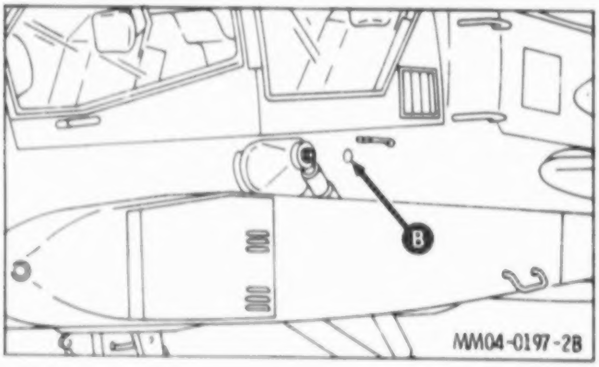
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.





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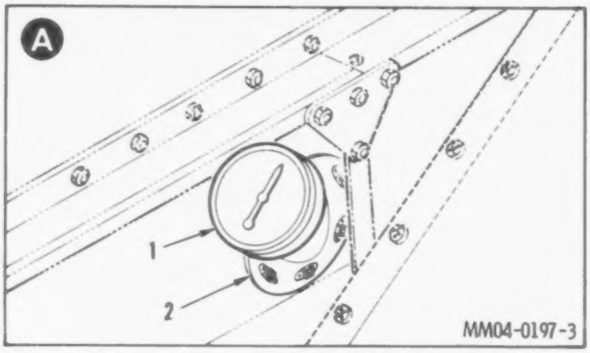
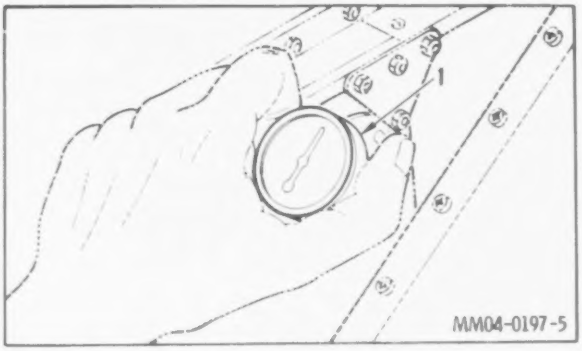
8-5-5. OUTSIDE AIR TEMPERATURE INDICATOR REMOVAL/INSTALLATION (cont) 8-5-5

2. **Remove outside air temperature indicator (1) from support (2).**

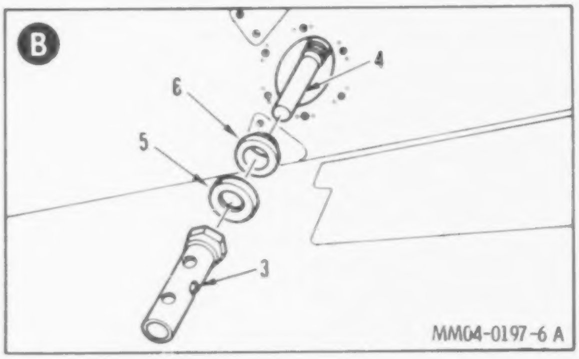

A
1
2
MM04-0197-3

   a. Hold indicator (1) in place.


1
MM04-0197-5

   b. Second person remove sunshield (3) from probe (4).

   c. Remove washers (5) and (6) from probe (4).


B
4
6
5
3
MM04-0197-6 A

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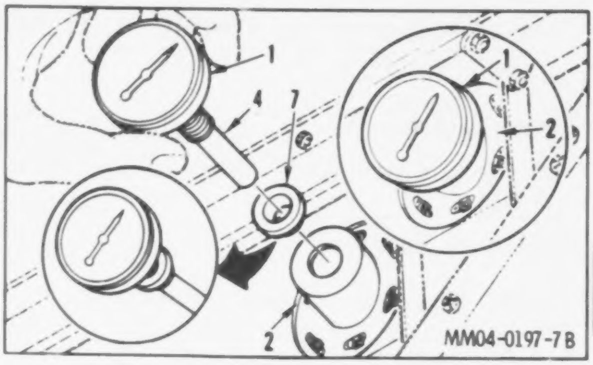
8-5-5. OUTSIDE AIR TEMPERATURE INDICATOR REMOVAL/INSTALLATION (cont) 8-5-5

d. First person lift indicator (1) clear of support (2).

e. Remove washer (7) from probe (4).



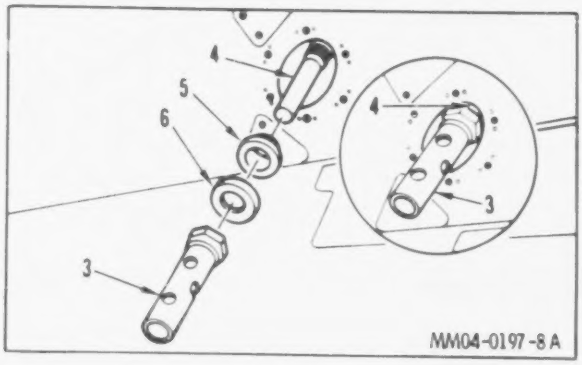
B. CLEANING

Wipe all removed parts with a clean rag.

C. INSPECTION

Check indicator, sunshield, and probe for cracks, nicks, and dents. None allowed.

D. INSTALLATION



1. First person install washer (7) on probe (4) of indicator (1).
2. Position indicator (1) in support (2) so indicator dial is readable.
3. Hold indicator (1) in place.
4. Second person install two washers (5) and (6) on probe (4).
5. Install sunshield (3).
6. Inspect (TI).
7. Perform aircraft systems testing of thermotemperature indicator. (TM 55-1500-204-25/1).

END OF TASK

8-5-6. PILOT/CPG STABILATOR POSITION INDICATOR REMOVAL/INSTALLATION 8-5-6

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Set, Electrical Repairer's	5180-00-323-4915

Personnel Required:

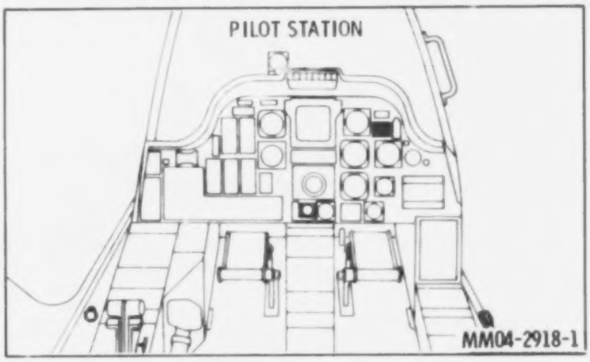
67R10	Attack Helicopter Repairer
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

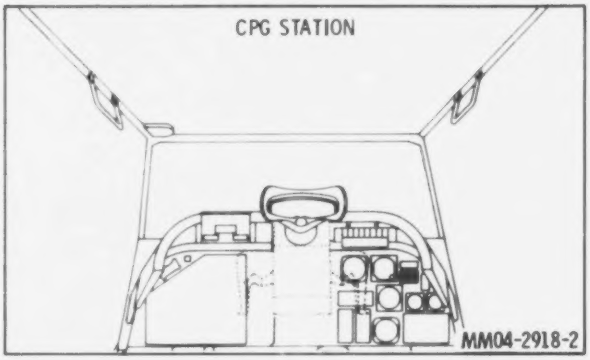
References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed





A. REMOVAL

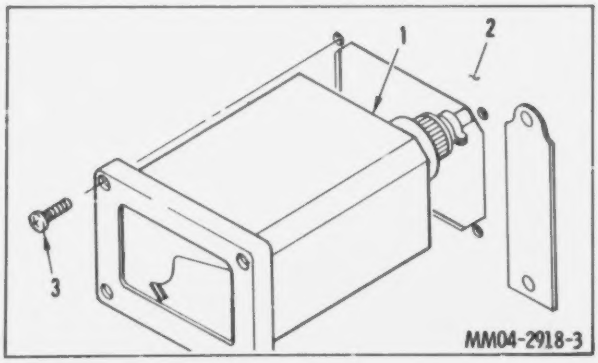
1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open STAB circuit breakers AUTO AC, AUTO DC, MAN DC, and MAN AC on pilot aft circuit breaker panel.

3. Enter CPG station (para 1-7-1) if CPG station stabilator position indicator (1) removal and installation are to be done. Observe all safety precautions.

4. Remove indicator (1) from right instrument panel (2). Remove four screws (3).

5. Remove indicator (1) from panel (2).



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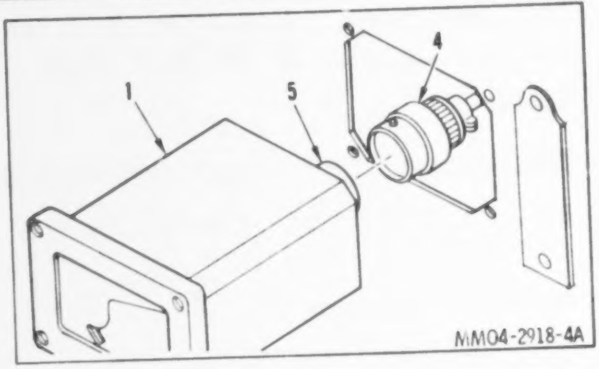
8-5-6. PILOT/CPG STABILATOR POSITION INDICATOR REMOVAL/INSTALLATION (cont) 8-5-6

6. Detach connector P981 (pilot)/P982 (CPG) (4) from connector M51J1 (pilot)/M52J1 (CPG) (5) on back of indicator (1).

7. Remove indicator (1).

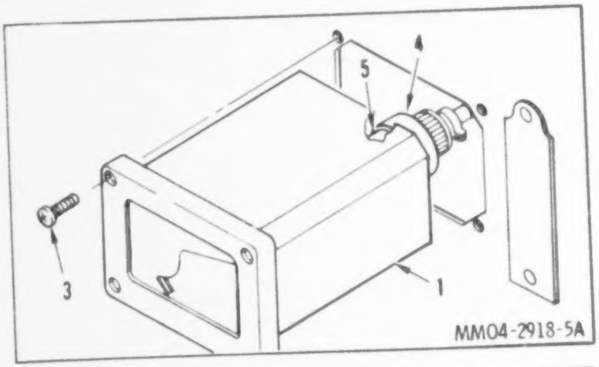


B. CLEANING

Wipe mounting area and indicator with a clean rag.

C. INSPECTION

Check indicator for missing or loose hardware.



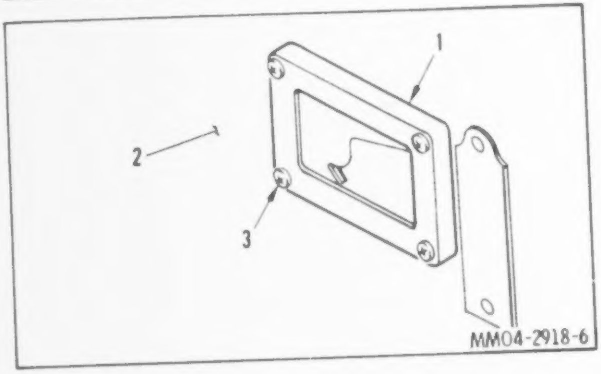
D. REPAIR

1. Repair indicator by replacing or tightening hardware.

E. INSTALLATION

1. Aline and attach connector P981 (pilot)/P982 (CPG) (4) to connector M51J1 (pilot)/M52J1 (CPG) (5) on back of indicator (1).

2. Aline indicator (1) on panel (2). Install four screws (3).



3. Inspect (TI).

4. Perform stabilator operational check (TM 55-1520-238-T).

END OF TASK

8-5-7. PILOT/CPG STABILATOR POSITION PLACARD ILT PANEL REMOVAL/INSTALLATION 8-5-7

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. REPAIR E. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

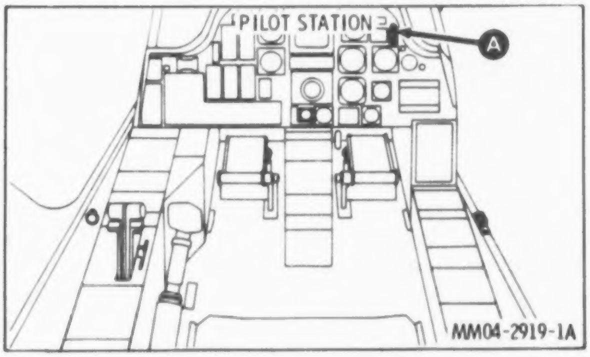
TM 55-1520-238-T

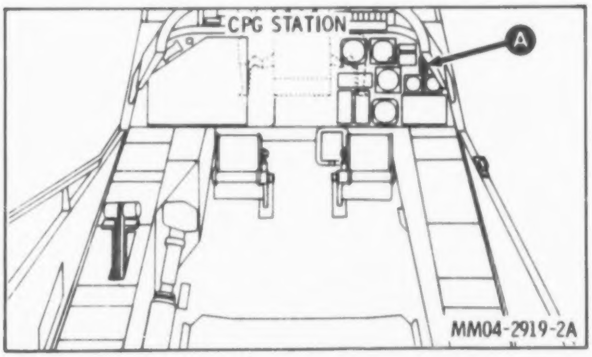
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot or CPG station (para 1-7-1). Observe all safety precautions.





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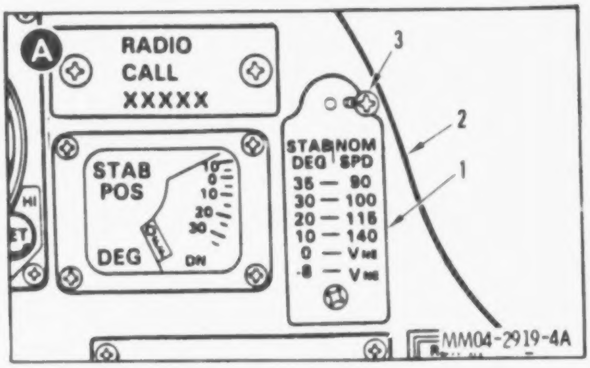
2. Remove stabilator position placard ILT panel (1) from right instrument panel (2).

   a. Remove two screws (3).

   b. Remove panel (1) by gently pulling straight out from instrument panel (2).


A
RADIO
CALL
XXXXX
STAB
POS
DEG
HI
DN
10
0
10
20
30
STAB DEG
NOM SPD
35 — 90
30 — 100
20 — 115
10 — 140
0 — V
-8 — V
1
2
3
MM04-2919-4A

B. CLEANING

Wipe mounting area and panel with a clean rag.

C. INSPECTION

Check instrument panel for loose or missing hardware.

D. REPAIR

Repair panel by replacing or tightening hardware.

E. INSTALLATION

1. Install panel (1) on panel (2).

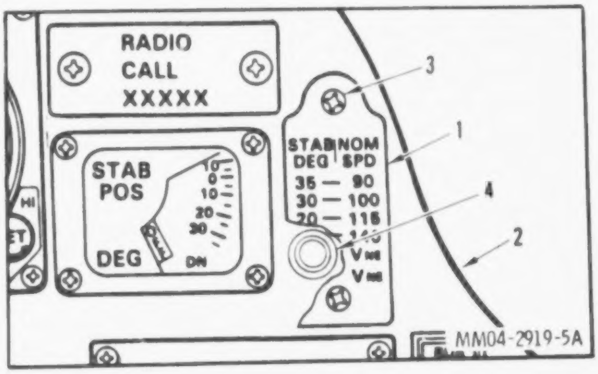
   a. Position panel (1) so connector J691 (pilot)/J692 (CPG) (4) will be alined.

   b. Press on panel (1) to attach connector J691 (pilot)/J692 (CPG) (4) to panel (1) and aline holes.

   c. Install two screws (3).

2. Inspect (TI).

3. Perform stabilator operational check (TM 55-1520-238-T).


RADIO
CALL
XXXXX
STAB
POS
DEG
HI
DN
10
0
10
20
30
STAB DEG
NOM SPD
35 — 90
30 — 100
20 — 115
1
2
3
4
MM04-2919-5A

END OF TASK

CHAPTER 9

ELECTRICAL SYSTEM

CHAPTER OVERVIEW

This chapter contains description and operation information and maintenance instructions for the electrical eystem.

Electrical system troubleshooting information is in TM 55-1520-238-T.

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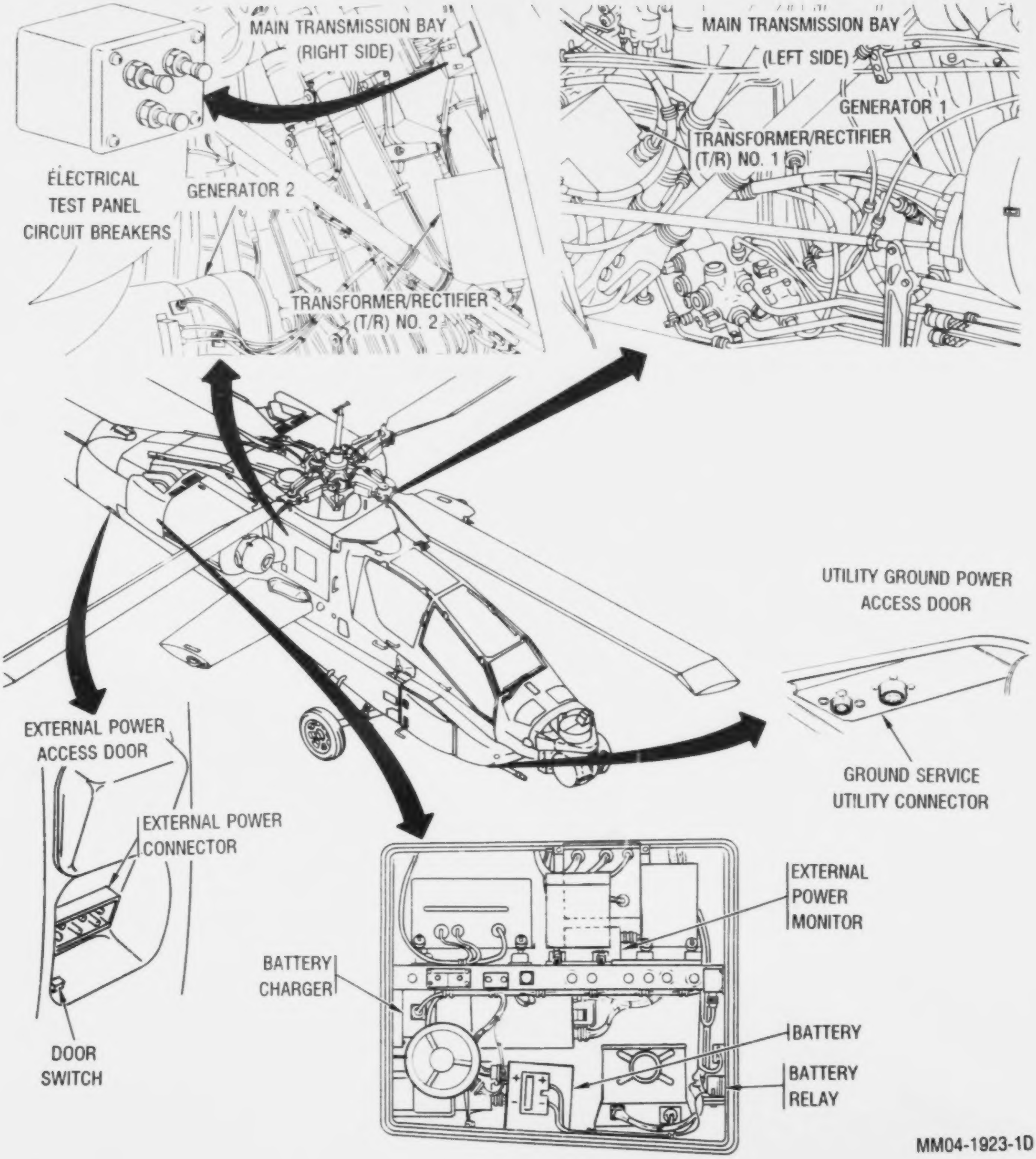
Section I. POWER GENERATION AND DISTRIBUTION

DESCRIPTION AND OPERATION

9-1-1. POWER GENERATION AND DISTRIBUTION SYSTEM DESCRIPTION AND OPERATION 9-1-1


MAIN TRANSMISSION BAY
(RIGHT SIDE)
ELECTRICAL
TEST PANEL
CIRCUIT BREAKERS
GENERATOR 2
TRANSFORMER/RECTIFIER
(T/R) NO. 2
MAIN TRANSMISSION BAY
(LEFT SIDE)
GENERATOR 1
TRANSFORMER/RECTIFIER
(T/R) NO. 1
UTILITY GROUND POWER
ACCESS DOOR
GROUND SERVICE
UTILITY CONNECTOR
EXTERNAL POWER
ACCESS DOOR
EXTERNAL POWER
CONNECTOR
DOOR
SWITCH
EXTERNAL
POWER
MONITOR
BATTERY
CHARGER
BATTERY
BATTERY
RELAY

MM04-1923-1D

9-1-1. POWER GENERATION AND DISTRIBUTION SYSTEM DESCRIPTION AND OPERATION (cont)

A. Power generation and distribution components are at the following locations:

Main transmission bay
Aft avionics equipment bay
External power access door
Utility ground power access door
Electrical power distribution box
Pilot and CPG stations

B. Components in the main transmission bay are:

Two 115/200 VAC, 3-phase, 400 HZ, 35 KVA generators

Two 28 VDC, 350-amp transformer-rectifiers (TR1 and TR2)

Two ELEC UTIL PWR (AC and DC) circuit breakers

One NITROGEN INERT circuit breaker

C. Components in the aft avionics equipment bay are:

A 19-cell, 13 amp hr, 24 VDC nickel cadmium (ni-cad) battery

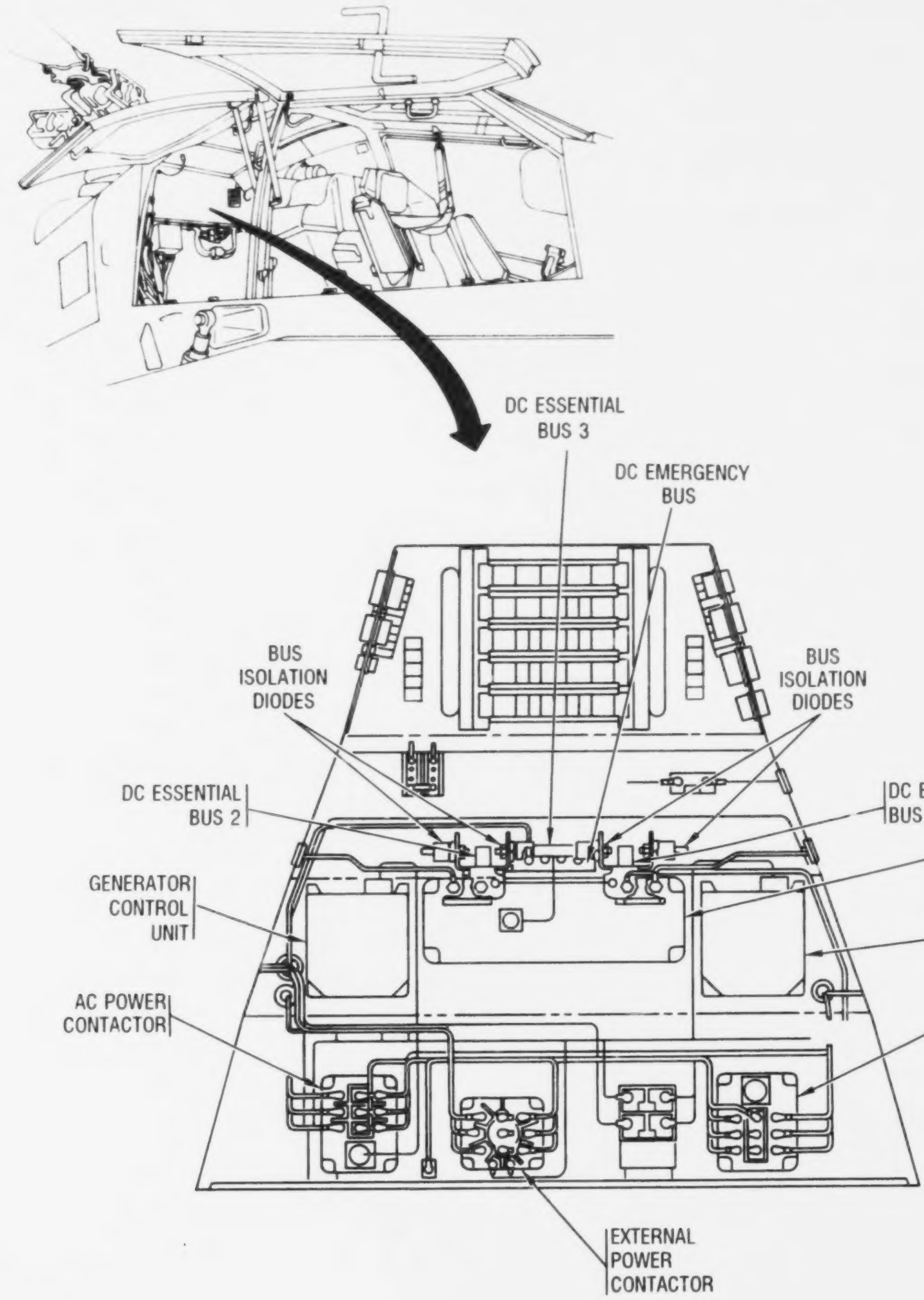
On-board battery charger

Battery relay

External power monitor

D. An external power connector and door switch are at the external power access door.

E. A utility connector is at the utility ground power access door.



DC ESSENTIAL BUS 3
DC EMERGENCY BUS
BUS ISOLATION DIODES
BUS ISOLATION DIODES
DC ESSENTIAL BUS 2
DC ESSENTIAL BUS 1
DC CONTRACTOR
GENERATOR CONTROL UNIT
GENERATOR CONTROL UNIT
AC POWER CONTACTOR
AC POWER CONTACTOR
EXTERNAL POWER CONTACTOR

MM04-1923-2B

9-1-1. POWER GENERATION AND DISTRIBUTION SYSTEM DESCRIPTION AND OPERATION (cont)

F. Components in the electrical power distribution box:

Two generator control units

Two AC power contactors

One DC contactor

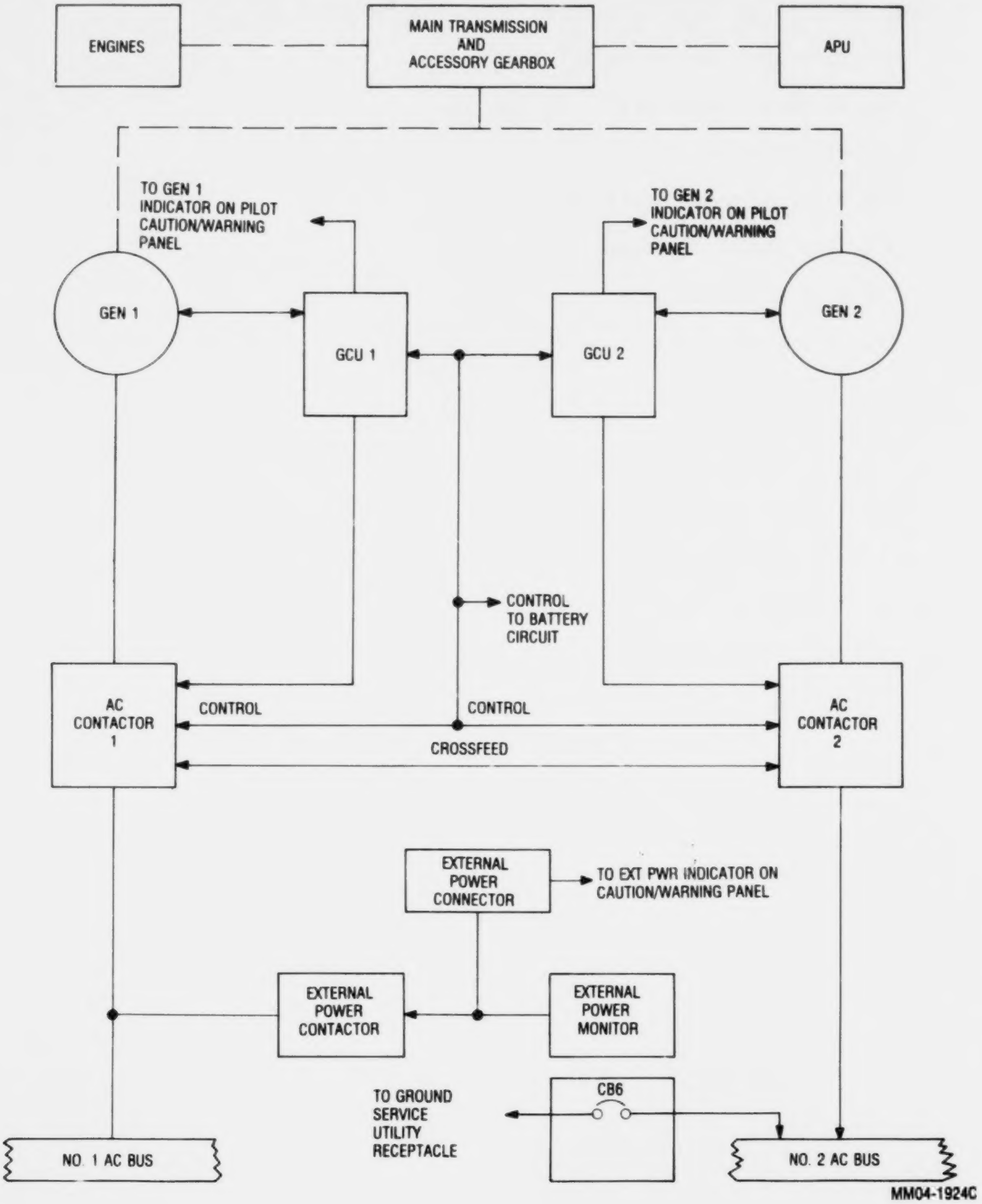
One external power contactor

Four bus isolation diodes

Three DC essential buses

One DC emergency bus

9-1-2. POWER GENERATION AND DISTRIBUTION AC SYSTEM DESCRIPTION AND OPERATION 9-1-2


ENGINES
MAIN TRANSMISSION AND ACCESSORY GEARBOX
APU
TO GEN 1 INDICATOR ON PILOT CAUTION/WARNING PANEL
TO GEN 2 INDICATOR ON PILOT CAUTION/WARNING PANEL
GEN 1
GCU 1
GCU 2
GEN 2
CONTROL TO BATTERY CIRCUIT
AC CONTACTOR 1
CONTROL
CONTROL
CROSSFEED
AC CONTACTOR 2
EXTERNAL POWER CONNECTOR
TO EXT PWR INDICATOR ON CAUTION/WARNING PANEL
EXTERNAL POWER CONTACTOR
EXTERNAL POWER MONITOR
TO GROUND SERVICE UTILITY RECEPTACLE
CB6
NO. 1 AC BUS
NO. 2 AC BUS
MM04-1924C

9-1-2. POWER GENERATION AND DISTRIBUTION AC SYSTEM DESCRIPTION AND OPERATION (cont)

A. The AC generators are driven by the accessory gearbox of the main transmission. The gearbox is driven by either engine or by the auxiliary power unit (APU).

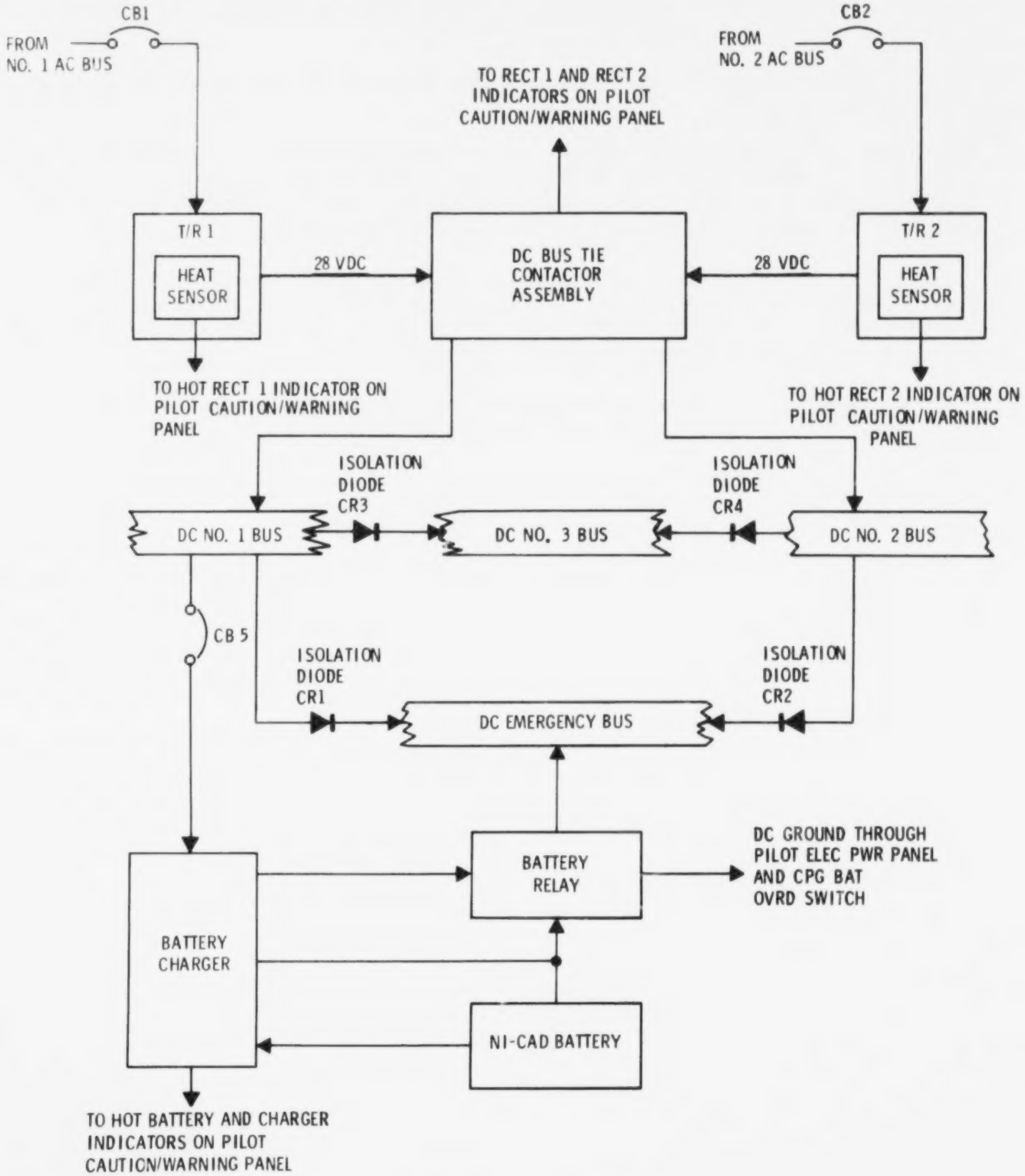
B. Two AC power contactors control connections between the generators and the AC No. 1 and No. 2 buses.

C. The generator control units (GCUs) control and protect the AC generators. If a line fault is detected by the sensing transformers in the generators, the GCU shuts the generator down. If a generator fails, the GCU controls the AC contactor to connect all loads to the remaining generator.

D. The external power monitor checks the three-phase ground power unit (GPU) power. If GPU power checks good, the external power contactor connects GPU power to the AC bus. If GPU power is abnormal, the external power monitor prevents the external power contactor from energizing.

E. Three-phase AC is directed to the ground service utility connector from the AC No. 2 bus. The circuit is protected by the **AC ELEC UTIL PWR** circuit breaker.

9-1-3. POWER GENERATION AND DISTRIBUTION DC SYSTEM DESCRIPTION AND OPERATION 9-1-3


CB1
FROM NO. 1 AC BUS
CB2
FROM NO. 2 AC BUS
TO RECT 1 AND RECT 2 INDICATORS ON PILOT CAUTION/WARNING PANEL
T/R 1
HEAT SENSOR
28 VDC
DC BUS TIE CONTACTOR ASSEMBLY
28 VDC
T/R 2
HEAT SENSOR
TO HOT RECT 1 INDICATOR ON PILOT CAUTION/WARNING PANEL
TO HOT RECT 2 INDICATOR ON PILOT CAUTION/WARNING PANEL
ISOLATION DIODE CR3
ISOLATION DIODE CR4
DC NO. 1 BUS
DC NO. 3 BUS
DC NO. 2 BUS
CB 5
ISOLATION DIODE CR1
ISOLATION DIODE CR2
DC EMERGENCY BUS
BATTERY RELAY
DC GROUND THROUGH PILOT ELEC PWR PANEL AND CPG BAT OVRD SWITCH
BATTERY CHARGER
NI-CAD BATTERY
TO HOT BATTERY AND CHARGER INDICATORS ON PILOT CAUTION/WARNING PANEL

MM04-1925C

9-1-3. POWER GENERATION AND DISTRIBUTION DC SYSTEM DESCRIPTION AND OPERATION (cont)

A. Two transformer-rectifiers (T/R1 and T/R2) change 115 VAC from the AC buses to 28 VDC. A heat sensor in each T/R detects an overheat condition. Overheat signals are sent to the pilot caution/warning panel.

B. Outputs of the transformer-rectifiers are connected to the respective DC bus through the DC bus tie contactor. The bus tie contactor contains contactors, switching relays, and a bus tie relay. The contactors connect the transformer-rectifiers to the No. 1 and No. 2 DC buses. The switching relays allow the bus tie relay to energize if one transformer-rectifier fails. The bus tie relay connects the No. 1 and No. 2 DC buses together when only one transformer-rectifier is operating. The operating T/R then supplies the full DC load.

C. The No. 3 DC bus is powered by the No. 1 DC bus, the No. 2 DC bus, or both No. 1 and No. 2 DC buses through isolation diodes CR3 and CR4. The isolation diodes allow current to flow from the No. 1 and/or No. 2 bus to the No. 3 bus but prevent current flow from the No. 3 bus to the No. 1 or No. 2 bus.

D. The DC emergency bus is powered by the No. 1 and/or No. 2 bus through isolation diodes CR1 and CR2. The diodes allow current to flow from the No. 1 and No. 2 bus to the DC emergency bus and isolate the emergency bus from the No. 1 and No. 2 buses when the battery is connected to the emergency bus.

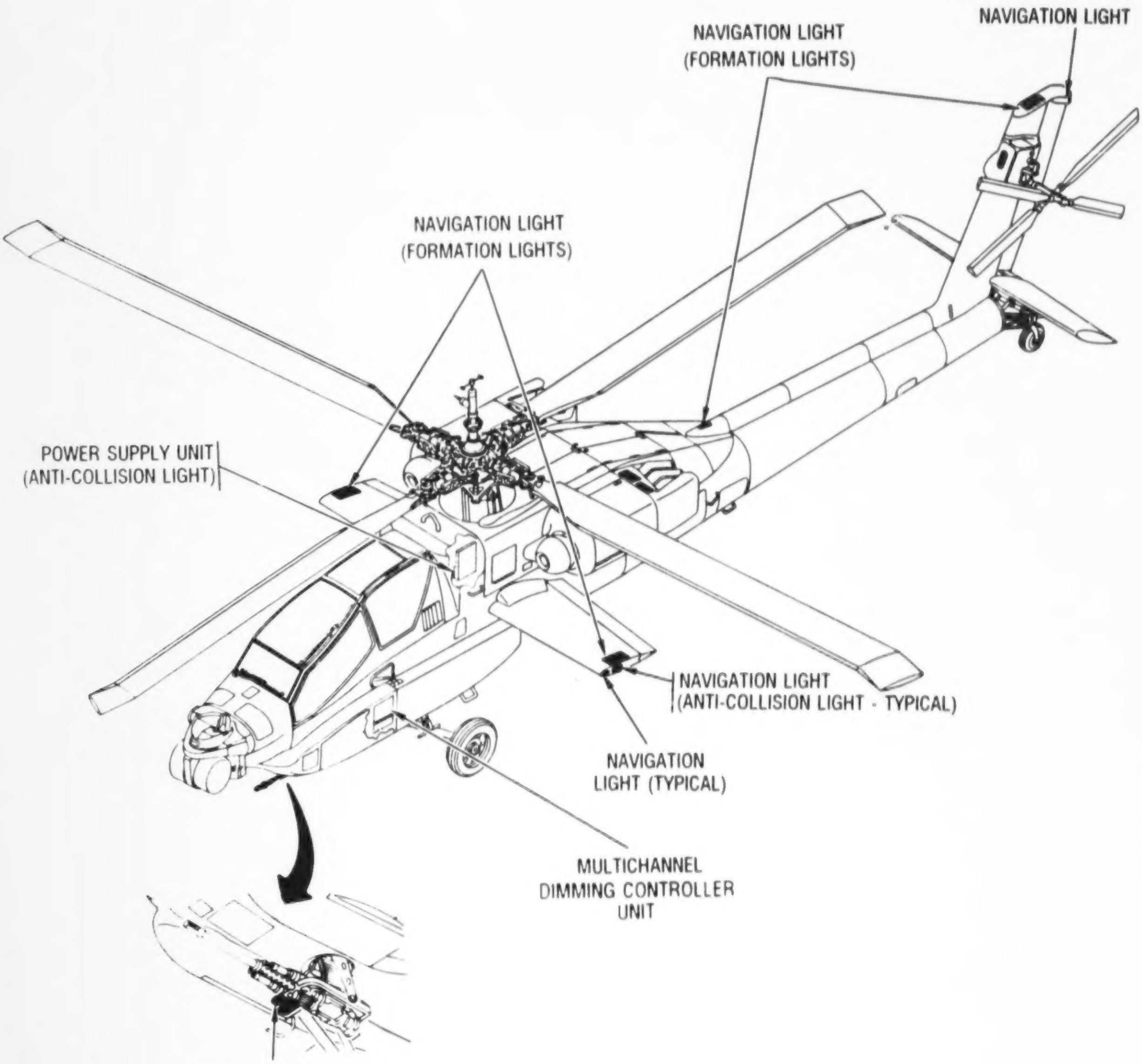
E. The battery charger utilizes 28 VDC from the No. 1 bus to charge the battery and control the battery relay. If a complete DC system failure occurs, the battery charger utilizes the battery power to energize the battery relay. The battery charger controls the HOT BATT and CHARGER caution lights on the pilot caution/warning panel.

F. The battery relay, when energized, connects the battery to the DC emergency bus. The relay can be energized only when both T/R's are inoperative, the pilot BATT/EXT PWR switch is in BATT, and the CPG BAT OVRD switch is in NRML.

G. The battery provides 24 VDC to the emergency bus if a complete 28 VDC failure occurs. The battery can power the emergency loads until a safe landing can be made.

Section II. LIGHTING PROVISIONS DESCRIPTION AND OPERATION

9-2-1. LIGHTING PROVISIONS DESCRIPTION AND OPERATION 9-2-1


NAVIGATION LIGHT
NAVIGATION LIGHT (FORMATION LIGHTS)
NAVIGATION LIGHT (FORMATION LIGHTS)
POWER SUPPLY UNIT (ANTI-COLLISION LIGHT)
NAVIGATION LIGHT (ANTI-COLLISION LIGHT - TYPICAL)
NAVIGATION LIGHT (TYPICAL)
MULTICHANNEL DIMMING CONTROLLER UNIT
LANDING/SEARCH LIGHT

MM04-1911-1E

9-2-1. LIGHTING PROVISIONS DESCRIPTION AND OPERATION (cont) 9-2-1

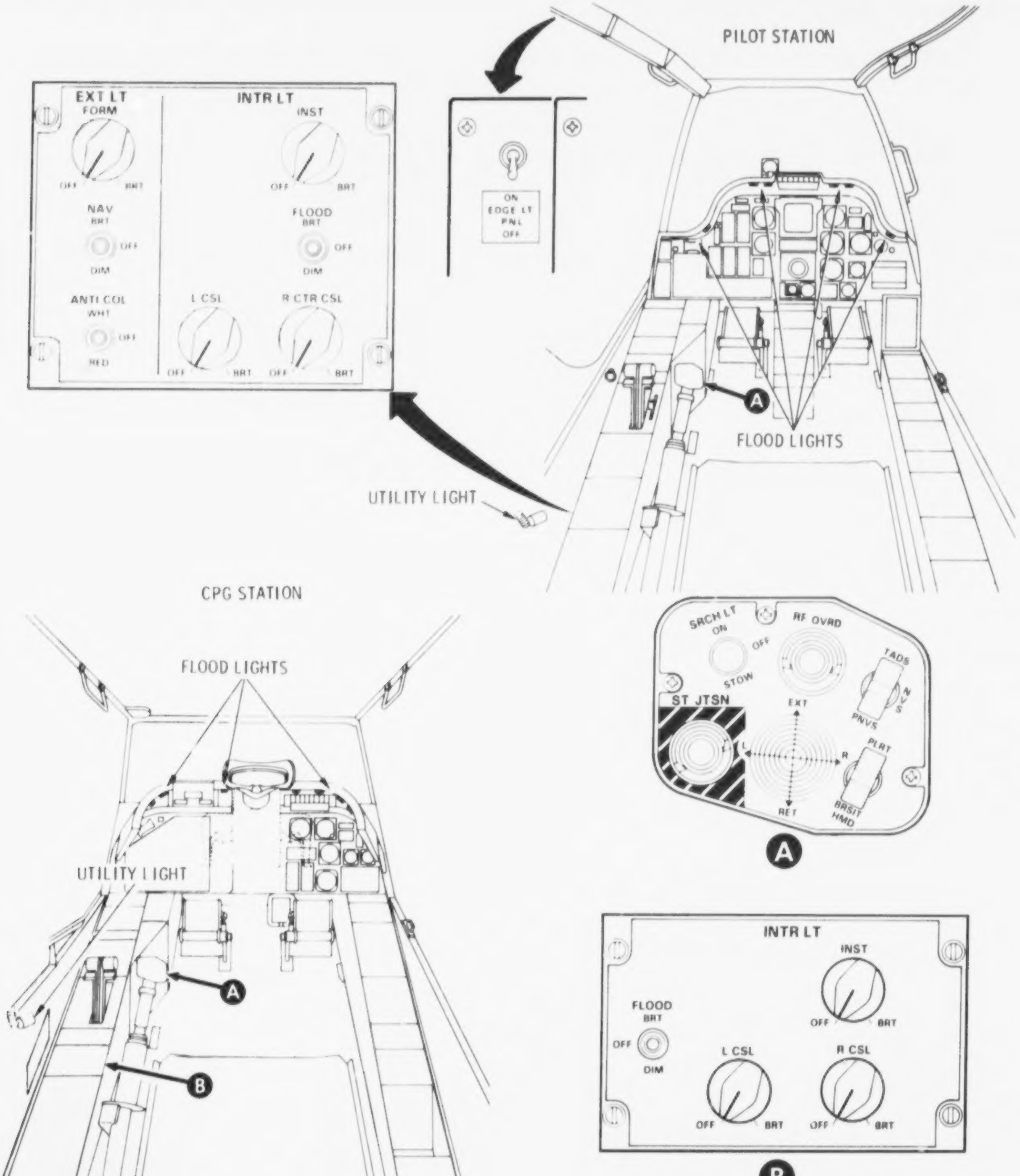
A. Exterior lights are located as follows:

ONE LANDING/SEARCHLIGHT	Under right forward avionics bay (FAB) fairing. This light can be extended, retracted, and turned left or right by the pilot or CPG.
THREE NAVIGATION LIGHTS	Red (left) and green (right) lights are at forward ends of wingtips. A white light is at top aft edge of vertical stabilizer.
TWO ANTICOLLISION LIGHTS	At centers of wingtips. Can be switched to white or red.
FOUR FORMATION LIGHTS	At top outer ends of wings, top center of fuselage, and top of vertical stabilizer.

B. The anticollision light power supply is on the left side of the main transmission bay.

C. The multichannel dimming controller unit is in left FAB.

9-2-1. LIGHTING PROVISIONS DESCRIPTION AND OPERATION (cont) 9-2-1


PILOT STATION
EXT LT
FORM
OFF
BRT
NAV
BRT
OFF
DIM
ANTI COL
WHT
OFF
RED
INTR LT
INST
OFF
BRT
FLOOD
BRT
OFF
DIM
L CSL
OFF
BRT
R CTR CSL
OFF
BRT
ON
EDGE LT
PNL
OFF
A
FLOOD LIGHTS
UTILITY LIGHT
CPG STATION
FLOOD LIGHTS
UTILITY LIGHT
A
B
SRCH LT
ON
OFF
STOW
RF OVRD
TADS
NVS
PNVS
ST JTSN
EXT
L
R
RET
PLRT
BRSIT
HMD
A
INTR LT
INST
OFF
BRT
FLOOD
BRT
OFF
DIM
L CSL
OFF
BRT
R CSL
OFF
BRT
B

MM04-1911-2B

9-2-1. LIGHTING PROVISIONS DESCRIPTION AND OPERATION (cont) 9-2-1

D. Interior lights:

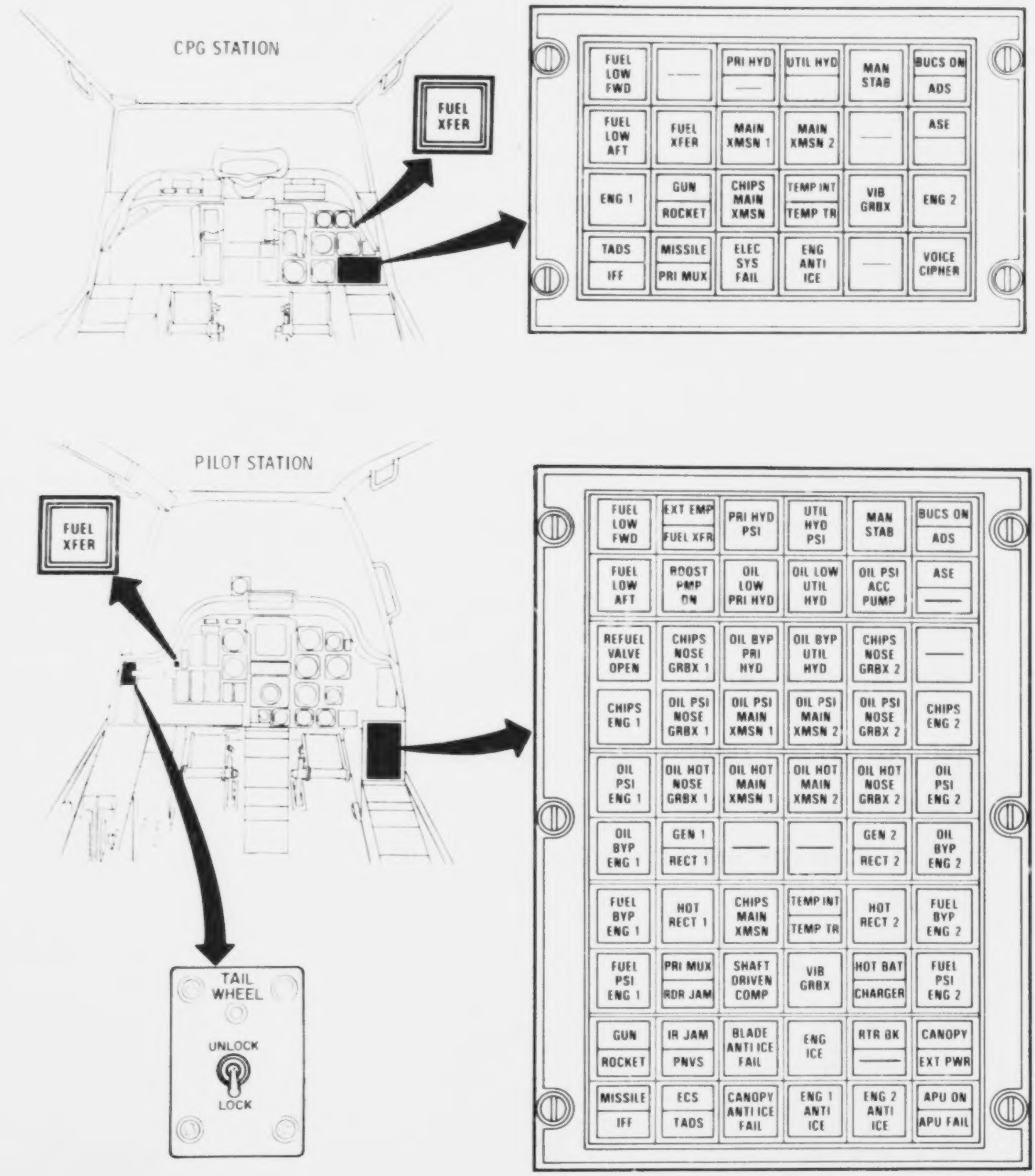
FOURTEEN FLOODLIGHTS	Seven lights under each crew station glare shield. Can be switched to bright or dim.
TWO UTILITY LIGHTS	One light over each crew station left console. Can be positioned as needed.
CONSOLE LIGHTS	Built into each crew station console.

E. Lighting controls' are:

TWO SRCH LT ON/OFF/STOW SWITCHES	One switch on each collective stick head.
TWO SRCH LT EXT/RET/L/R SWITCHES	One switch on each collective stick head.
ONE NAV BRT/DIM/OFF SWITCH	On pilot EXT LT/INTR LT panel.
ONE ANTICOL WHT/RED/OFF SWITCH	On pilot EXT LT/INTR LT panel.
ONE FORM OFF/BRT KNOB	On pilot EXT LT/INTR LT panel.
TWO FLOOD BRT/DIM/OFF SWITCHES	One switch on each lighting control panel.
TWO UTILITY LIGHT ON/OFF DIMMER CONTROLS	One control built into each crew station utility light.
ONE EDGE LT PNL ON/OFF SWITCH	On pilot aft circuit breaker panel.
TWO INST OFF/BRT KNOBS	One knob on each lighting control panel.
TWO R CSL OFF/BRT KNOBS	One knob on each lighting control panel.
TWO L CSL OFF/BRT KNOBS	One knob on each lighting control panel.

Section III. CAUTION AND WARNINGS DESCRIPTION AND OPERATION

9-3-1. CAUTION AND WARNING SYSTEM DESCRIPTION AND OPERATION 9-3-1


CPG STATION
FUEL XFER
FUEL LOW FWD
PRI HYD
UTIL HYD
MAN STAB
BUCS ON
ADS
FUEL LOW AFT
FUEL XFER
MAIN XMSN 1
MAIN XMSN 2
ASE
ENG 1
GUN
ROCKET
CHIPS MAIN XMSN
TEMP INT
TEMP TR
VIB GRBX
ENG 2
TADS
IFF
MISSILE
PRI MUX
ELEC SYS FAIL
ENG ANTI ICE
VOICE CIPHER
PILOT STATION
FUEL XFER
FUEL LOW FWD
EXT EMP
FUEL XFR
PRI HYD PSI
UTIL HYD PSI
MAN STAB
BUCS ON
ADS
FUEL LOW AFT
BOOST PMP ON
OIL LOW PRI HYD
OIL LOW UTIL HYD
OIL PSI ACC PUMP
ASE
REFUEL VALVE OPEN
CHIPS NOSE GRBX 1
OIL BYP PRI HYD
OIL BYP UTIL HYD
CHIPS NOSE GRBX 2
CHIPS ENG 1
OIL PSI NOSE GRBX 1
OIL PSI MAIN XMSN 1
OIL PSI MAIN XMSN 2
OIL PSI NOSE GRBX 2
CHIPS ENG 2
OIL PSI ENG 1
OIL HOT NOSE GRBX 1
OIL HOT MAIN XMSN 1
OIL HOT MAIN XMSN 2
OIL HOT NOSE GRBX 2
OIL PSI ENG 2
OIL BYP ENG 1
GEN 1
RECT 1
GEN 2
RECT 2
OIL BYP ENG 2
FUEL BYP ENG 1
HOT RECT 1
CHIPS MAIN XMSN
TEMP INT
TEMP TR
HOT RECT 2
FUEL BYP ENG 2
FUEL PSI ENG 1
PRI MUX
RDR JAM
SHAFT DRIVEN COMP
VIB GRBX
HOT BAT
CHARGER
FUEL PSI ENG 2
GUN
ROCKET
IR JAM
PNVS
BLADE ANTI ICE FAIL
ENG ICE
RTR BK
CANOPY
EXT PWR
MISSILE
IFF
ECS
TADS
CANOPY ANTI ICE FAIL
ENG 1 ANTI ICE
ENG 2 ANTI ICE
APU ON
APU FAIL
TAIL WHEEL
UNLOCK
LOCK

MM04-1922-B

9-3-1. CAUTION AND WARNING SYSTEM DESCRIPTION AND OPERATION (cont) 9-3-1

A. The power generation and distribution system provides fault signals to the caution/warning/advisory system. These signals alert the crew to electrical problems by lighting fault lights.

B. The caution panels in the pilot and CPG stations are at the lower right corner of the instrument panel.

C. All fault lights are amber unless otherwise noted.

D. Fault lights on the pilot caution/warning panel are:

GEN 1 or GEN 2	Indicates faulty generator shutdown. Signal from generator control unit (GCU).
EXT PWR	Informs pilot that external power receptacle door is open. Signal from switch in access door.
RECT 1 or RECT 2	Indicates failure of transformer/rectifier (T/R). Signal from DC contactor.
HOT RECT 1 or HOT RECT 2	Indicates excessive heat in T/R 1 or T/R 2. Signals from heat sensors in each T/R.
HOT BAT	Indicates excessive heat in ni-cad battery. Signal from fault annunciator on battery case.
CHARGER	Indicates when battery charger stops charging. Signal from fault annunciator on charger case.

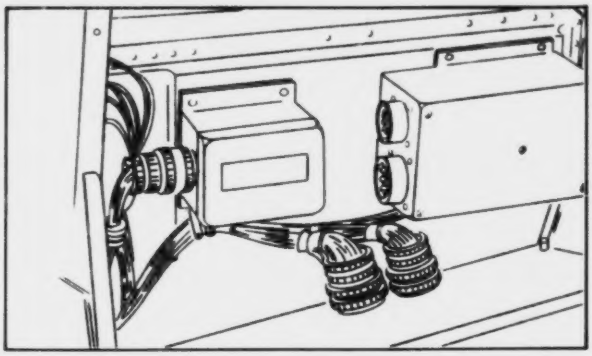
E. A **CANOPY** fault light on the pilot caution/warning panel indicates canopy not completely closed. Signal from pilot or CPG canopy switch.

F. A **ELEC SYS FAIL** fault light on the CPG caution/warning panel indicates failure of T/R 1 and T/R 2. Also indicates complete electrical power failure and need for emergency power. Signals from bus tie relays in DC contactor.

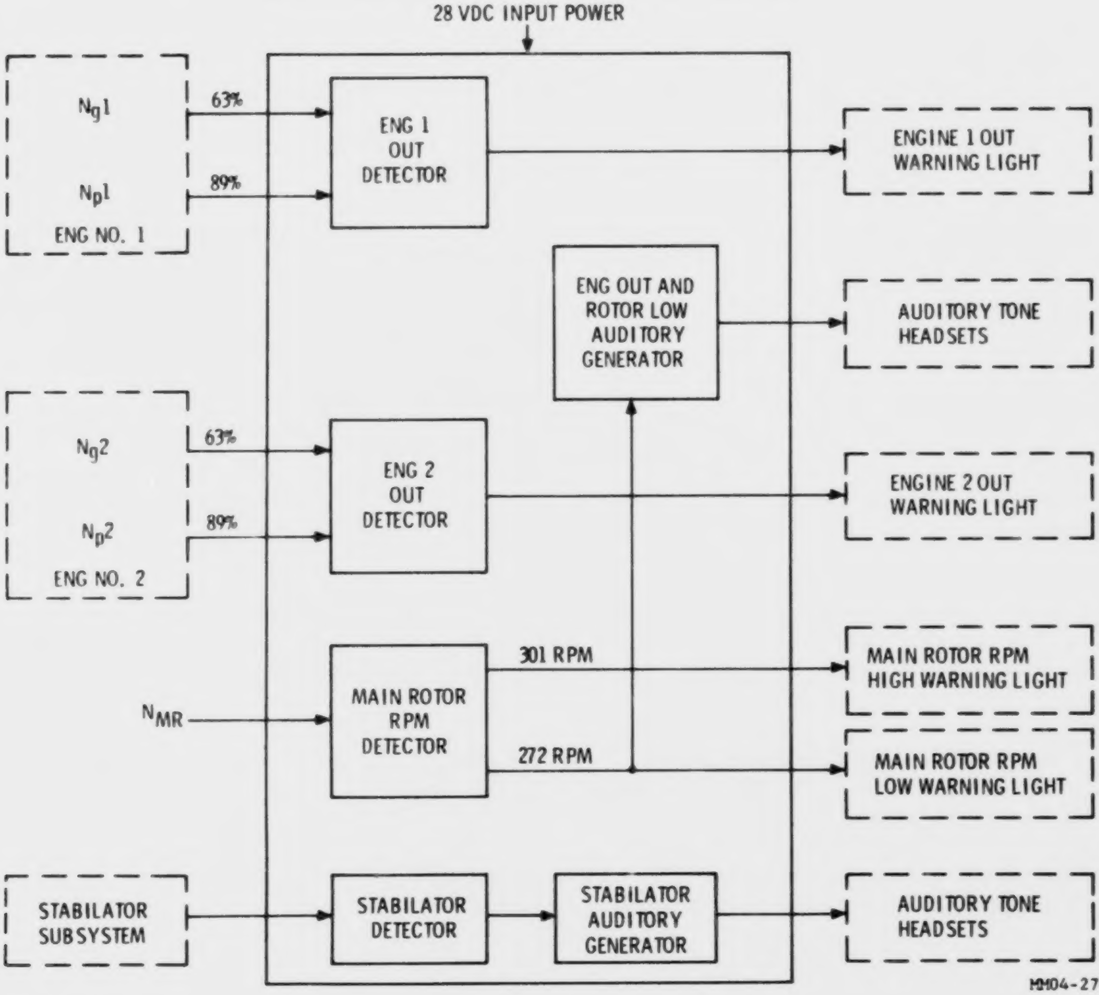
G. A **TAILWHEEL UNLOCK/LOCK** (green) light on the pilot left instrument panel indicates condition of the tailwheel center-lock.

H. **FUEL XFER** (green) lights on the pilot left and CPG right instrument panels indicate fuel transfer; initiated by either crew member.

9-3-2. ENGINE OUT WARNING ALARM CONTROL DESCRIPTION AND OPERATION 9-3-2



MASTER CAUTION PANEL (PILOT AND CPG STATIONS)


28 VDC INPUT POWER
N_g1
N_p1
ENG NO. 1
63%
89%
ENG 1 OUT DETECTOR
ENGINE 1 OUT WARNING LIGHT
ENG OUT AND ROTOR LOW AUDITORY GENERATOR
AUDITORY TONE HEADSETS
N_g2
N_p2
ENG NO. 2
63%
89%
ENG 2 OUT DETECTOR
ENGINE 2 OUT WARNING LIGHT
N_{MR}
MAIN ROTOR RPM DETECTOR
301 RPM
272 RPM
MAIN ROTOR RPM HIGH WARNING LIGHT
MAIN ROTOR RPM LOW WARNING LIGHT
STABILATOR SUBSYSTEM
STABILATOR DETECTOR
STABILATOR AUDITORY GENERATOR
AUDITORY TONE HEADSETS

MM04-2799A

9-3-2. ENGINE OUT WARNING ALARM CONTROL DESCRIPTION AND OPERATION (cont) 9-3-2

A. The engine-out warning alarm control is behind fairing L140.

B. The engine out warning alarm control auditory signals go to pilot and CPG headsets. Visual signals illuminate pilot and CPG master caution/warning panels.

C. The engine out warning alarm control provides these signals to alert the pilot and CPG about hazardous engine or main rotor speed or stabilator conditions:

Audio and visual signals when engine N_G speed drops to 63 percent or lower or N_P speed drops to 89 percent or lower

Visual signals when main rotor speed exceeds 301 rpm

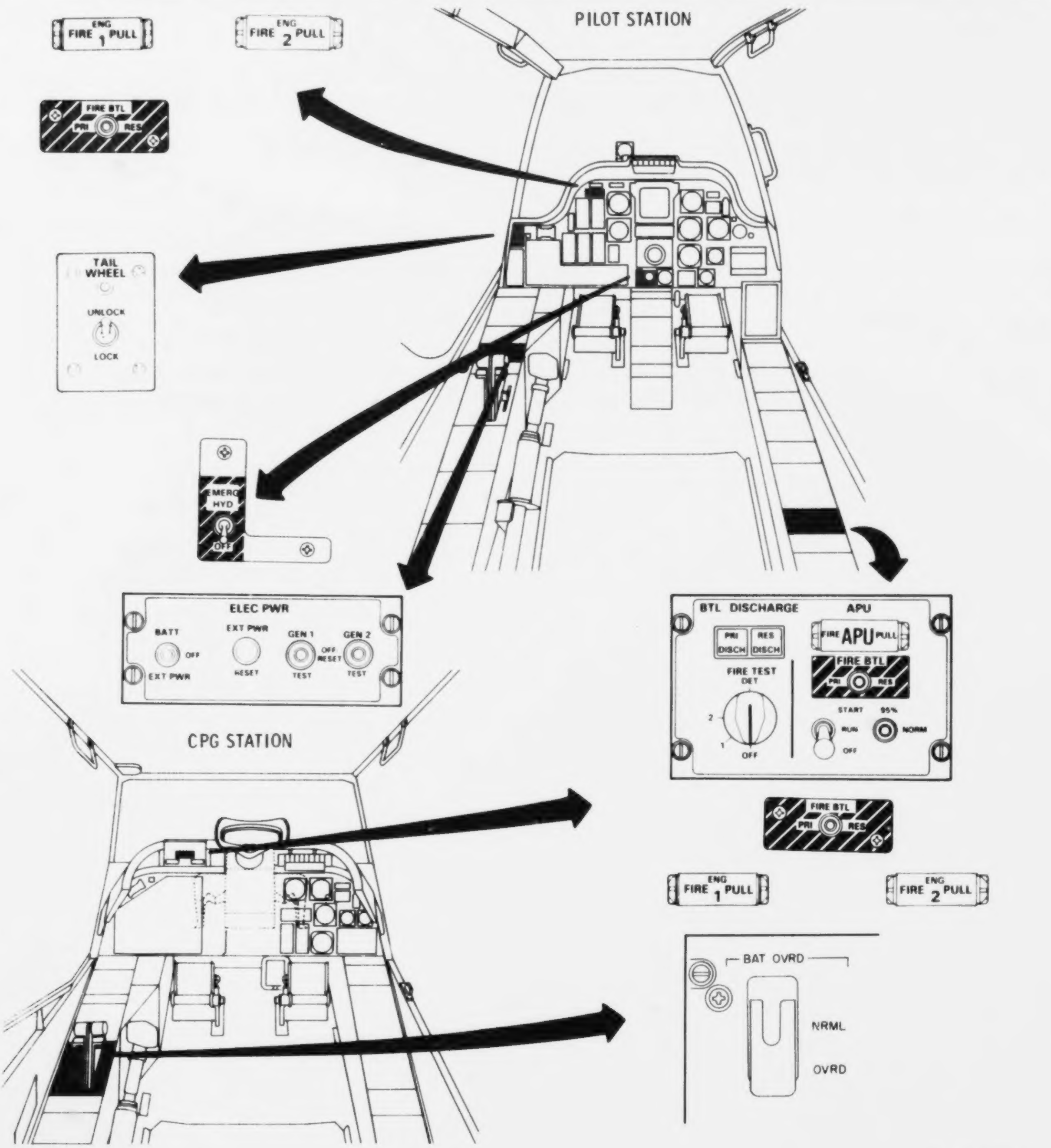
Audio and visual signals when main rotor speed falls below 272 rpm

Auditory tone or receipt of a stabilator warning discrete

D. The engine out warning alarm control operates on 28 VDC, 1.7 watts. The control accepts input signals from engine No. 1, engine No. 2, main rotor, and stabilator.

Section IV. MISCELLANEOUS ELECTRICAL SYSTEM DESCRIPTION AND OPERATION

9-4-1. MISCELLANEOUS ELECTRICAL SYSTEM DESCRIPTION AND OPERATION 9-4-1


PILOT STATION
FIRE ENG 1 PULL
FIRE ENG 2 PULL
FIRE BTL
PRI
RES
TAIL WHEEL
UNLOCK
LOCK
EMERG HYD
OFF
ELEC PWR
BATT
OFF
EXT PWR
EXT PWR
RESET
GEN 1
OFF RESET
TEST
GEN 2
TEST
CPG STATION
BTL DISCHARGE
APU
PRI DISCH
RES DISCH
FIRE APU PULL
FIRE TEST
DET
2
1
OFF
START
RUN
OFF
95%
NORM
BAT OVRD
NRML
OVRD

MM04-1920-1B

9-4-1. MISCELLANEOUS ELECTRICAL SYSTEM DESCRIPTION AND OPERATION (cont) 9-4-1

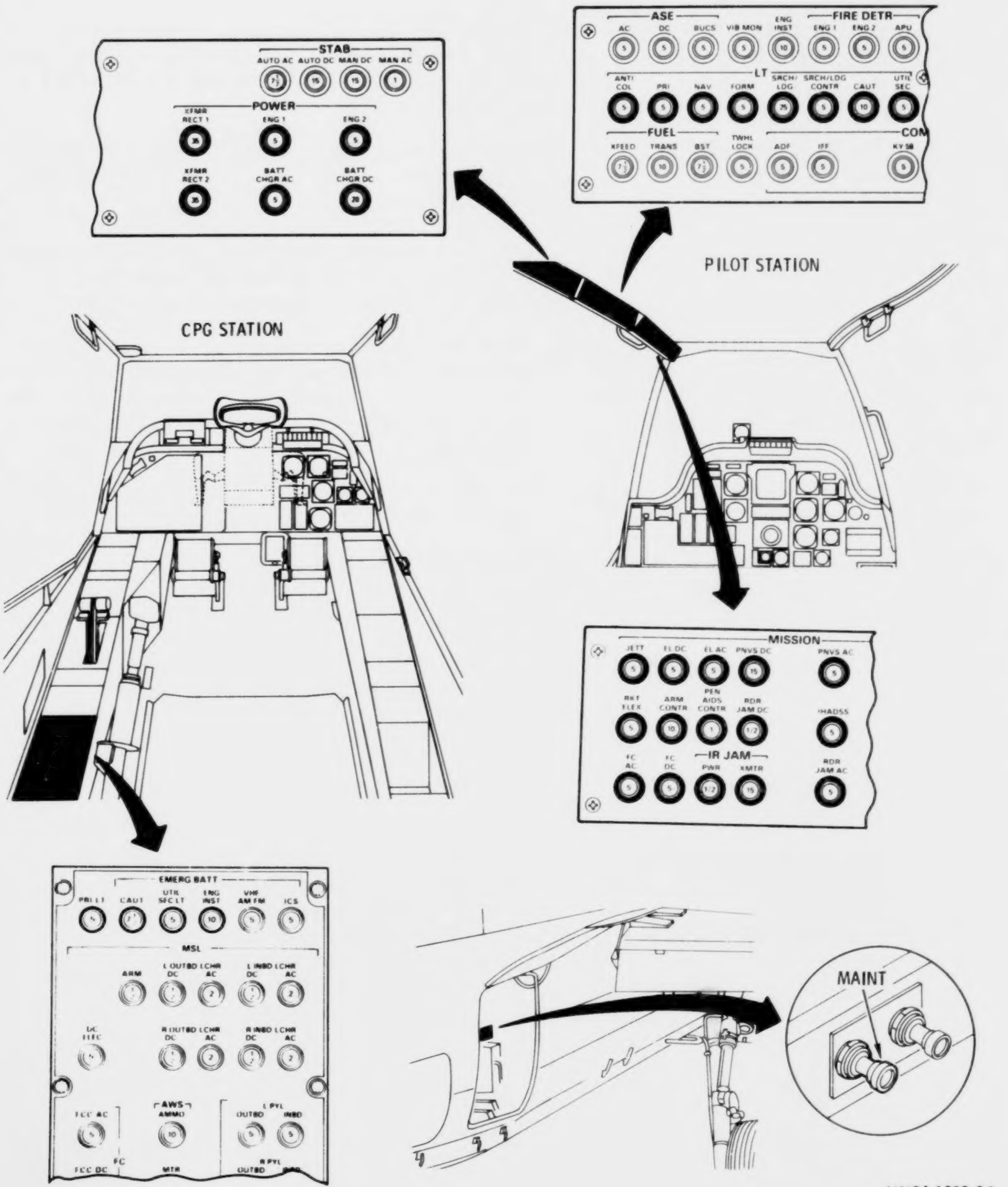
A. Crew station miscellaneous electrical controls:

Two engine **FIRE BTL PRI/RES** selector switches	One switch above each crew station left instrument panel. Select fire extinguisher to be used when **ENG 1** or **ENG 2 FIRE PULL** switch is pulled.
One **APU FIRE BTL PRI/RES** selector switch	On pilot right aft console. Selects fire extinguisher to be used when **APU FIRE PULL** switch is pulled.
One **EMER HYD** switch	On pilot center instrument panel. In **EMER** position, reserve pressure flows into reserve hydraulic system.
One tailwheel **UNLOCK/LOCK** switch	On pilot left instrument panel. Controls tailwheel center lock.
One **APU FIRE PULL** switch	On pilot right aft console. Opens the selected fire extinguisher APU outlet.
One **BAT OVRD NRML/OVRD** Guarded switch	On CPG left console. Overrides pilot control of the battery circuit.

B. Crew station power distribution controls and indicators:

One **ELEC PWR** panel	On pilot left console. Switch functions:
BATT/EXT PWR switch	**BATT** position connects battery to DC emergency bus (**BAT OVRD** switch to **NRML** position). **EXT PWR** position connects external AC power to the AC buses.
EXT PWR/RESET switch (pushbutton)	Resets the AC power monitor.
GEN 1/OFF/RESET/TEST switch **GEN 2/OFF/RESET/TEST** switch	**GEN 1** or **GEN 2** position connects No. 1 or No. 2 generator to its AC bus. **OFF/RESET** positions disconnects generators from AC buses and resets generator control circuits. **TEST** positions permit self-test of disconnected generators.

9-4-1. MISCELLANEOUS ELECTRICAL SYSTEM DESCRIPTION AND OPERATION (cont) 9-4-1


STAB
AUTO AC
AUTO DC
MAN DC
MAN AC
POWER
XFMR RECT 1
ENG 1
ENG 2
XFMR RECT 2
BATT CHGR AC
BATT CHGR DC
ASE
AC
DC
BUCS
VIB MON
ENG INST
FIRE DETR
ENG 1
ENG 2
APU
LT
ANTI COL
PRI
NAV
FORM
SRCH/LDG
SRCH/LDG CONTR
CAUT
UTIL SEC
FUEL
XFEED
TRANS
BST
TWHL LOCK
ADF
IFF
COM
KY 58
PILOT STATION
CPG STATION
MISSION
JETT
EL DC
EL AC
PNVS DC
PNVS AC
RKT ELEX
ARM CONTR
PEN AIDS CONTR
RDR JAM DC
IHADSS
FC AC
FC DC
IR JAM
PWR
XMTR
RDR JAM AC
EMERG BATT
PRI LT
CAUT
UTIL SEC LT
ENG INST
VHF AM FM
ICS
MSL
ARM
L OUTBD LCHR DC
AC
L INBD LCHR DC
AC
DC ELEC
R OUTBD LCHR DC
AC
R INBD LCHR DC
AC
FCC AC
FC
FCC DC
AWS
AMMO
MTR
L PYL
OUTBD
INBD
R PYL
OUTBD
INBD
MAINT

MM04-1920-2C

9-4-1. MISCELLANEOUS ELECTRICAL SYSTEM DESCRIPTION AND OPERATION (cont) 9-4-1

C. Crew station lighting and power circuit breaker (CB) components:

Power distribution (**POWER**) circuit breakers on pilot aft CB panel.

- **ENG 1**
- **ENG 2**
- **BATT CHGR AC**
- **XFMR RECT 1**
- **XFMR RECT 2**
- **BATT CHGR DC**

Lighting (**LT**) circuit breakers on pilot center CB panel.

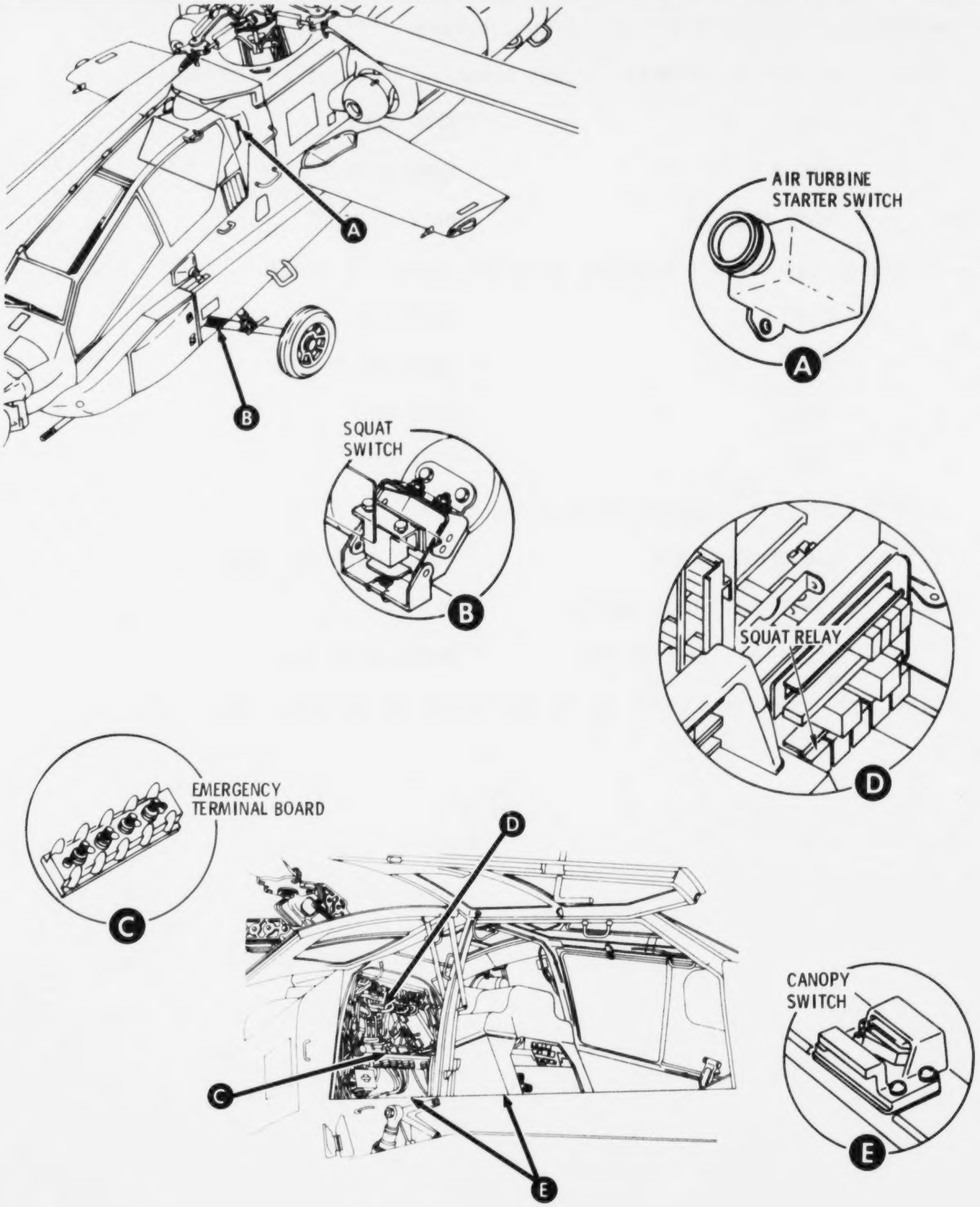
- **PRI**
- **NAV**
- **FORM**
- **CAUT**
- **SRCH/LDG**
- **SRCH/LDG CONTR**
- **ANTI-COL**
- **UTIL SEC**

Lighting circuit breakers on CPG CB panel No. 1.

- **EMERG BATT CAUT**
- **EMERG BATT UTIL SEC LT**
- **EMERG BATT VHF AM/FM**
- **EMERG BATT ENG INST**
- **PRI LT**
- **EMERG BATT ICS**

D. A **MAINT** light circuit breaker is in the right aft avionics bay.

9-4-1. MISCELLANEOUS ELECTRICAL SYSTEM DESCRIPTION AND OPERATION (cont) 9-4-1


A
B
AIR TURBINE
STARTER SWITCH
A
SQUAT
SWITCH
B
SQUAT RELAY
D
EMERGENCY
TERMINAL BOARD
C
D
C
CANOPY
SWITCH
E
E

MM04-1920-3A

9-4-1. MISCELLANEOUS ELECTRICAL SYSTEM DESCRIPTION AND OPERATION (cont) 9-4-1

E. On-ground squat switching (AC underfrequency protection circuit) components are:

One **SQUAT** switch	On bulkhead forward of the main landing gear left shock strut.
Two **SQUAT** relays	In the electrical power distribution box.

The squat switch is a magnetic proximity switch located in the left FAB. The switch is mounted to the airframe and the target is mounted on the main landing gear.

The switch acts as a safety device for some systems while enabling fault detection of other systems while the helicopter is on the ground. Systems affected by operation of the squat switch are:

SYSTEM	GROUND MODE (Switch Closed)	FLIGHT MODE (Switch Open)
IFF	IFF code stored in KIT. 1A/TSEC computer is zeroized unless **CODE** switch on pilot IFF panel is set to **HOLD** before landing.	Not applicable.
ANTI-ICE	**GND** position of TADS/PNVS ANTI-ICE switch enabled. **ON** position disabled.	**ON** position of TADS/PNVS ANTI-ICE switch enabled. **GND** position disabled.
DASE	PITCH, ROLL, YAW channels disabled. BUCS self-test enabled.	All DASE channels enabled. BUCS self-test disabled.
FIRE CONTROL	28 VDC applied through CPG FC panel and LH FAB MRTU, allowing FDLS to verify proper connection of CPG FC panel connectors.	Not applicable.
PYLONS	Pylon articulation disabled.	Pylon articulation normal.
AREA WEAPON	Gun travel limited.	Gun travel normal.

SYSTEM	GROUND MODE (Switch Open)	FLIGHT MODE (Switch Closed)
ICS	External wing connectors enabled.	External wing connectors disabled.
ELECTRICAL POWER	Generator 1 and 2 under frequency controls grounded to prevent loss of electrical power because of low generator rpm.	Generator control circuits operate normally.

F. The emergency bus terminal board (TB1-1) is in the power distribution box, back of the pilot seat.

G. Two canopy (open-canopy indicator circuit) switches are on the right canopy striker frames.

H. An air turbine starter switch is in the electrical power distribution box, below the emergency bus terminal board.

SECTION V. POWER GENERATION AND DISTRIBUTION COMPONENTS MAINTENANCE

9-5-1. POWER GENERATION AND DISTRIBUTION COMPONENTS INSPECTION 9-5-1

1. Check components for damage and loose mounting.
2. Check for loose, missing, or damaged mounting hardware. Replace as necessary.
3. Check wire bundles for chafing, loose mounting, and broken or missing wire ties.
4. Check wiring for cracked, broken, or burned insulation (TM 55-1500-323-24).
5. Check wire terminals for deformation and loose mounting.
6. Check connectors for loose mounting.
7. Check electrical terminals for damaged threads and loose mounting. Thread damage not to exceed 50 percent of one thread.
8. Check terminals, shields, and covers for damage and loose mounting.
9. Inspect switches for cracked or broken knobs and loose mounting.
10. Check buses and conductors for arcing burns (TM 55-1500-323-24).

9-5-2. AC GENERATOR NO. 1 REMOVAL/INSTALLATION 9-5-2

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Wrench, Torque, 1/4 Drive	5120-00-542-4489

Materials/Parts:

(E29) Lockwire

Personnel Required:

68F10	Aircraft Electrician (2) One to assist
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

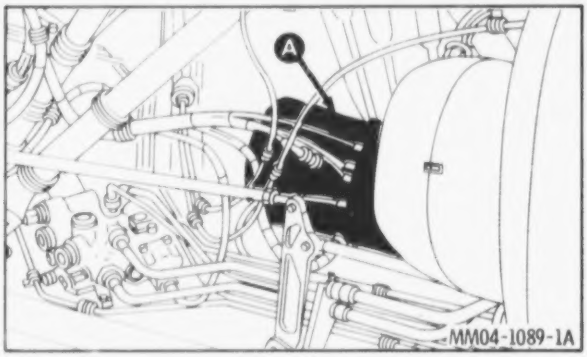
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panel L200 removed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open six POWER circuit breakers on pilot aft circuit breaker panel.



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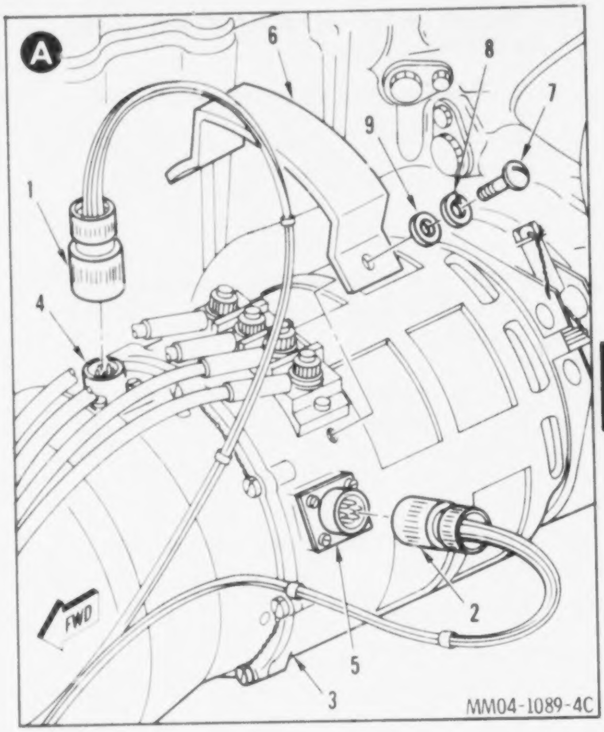
9-5-2. AC GENERATOR NO. 1 REMOVAL/INSTALLATION (cont) 9-5-2



3. **Detach connectors P2 (1) and P3 (2) from generator (3).**

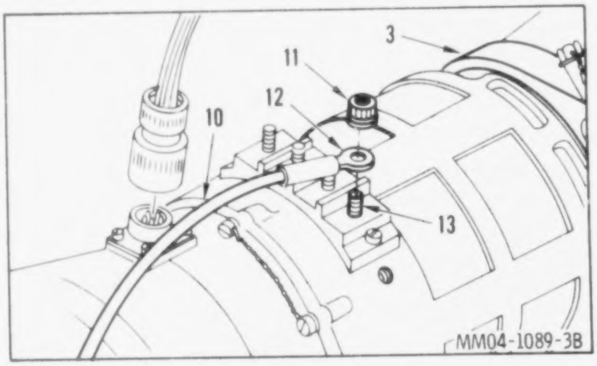
   a. Detach connector P2 (1) from connector J2 (4).

   b. Detach connector P3 (2) from connector J1 (5).

4. **Remove terminal cover (6) from generator (3).** Remove two screws (7), lock washers (8), and flat washers (9).

NOTE

Identify each wire and terminal during removal for proper placement during installation.



5. **Detach wires (10) from generator (3).**

   a. Identify wires (10).

   b. Remove four locknuts (11) and terminal lugs (12) from four studs (13).

GO TO NEXT PAGE

6. **Loosen quick-attach/detach (QAD) fitting (14).**

   a. Remove and discard lockwire.

   b. One person support generator (3).

   c. Loosen QAD fitting (14).

NOTE

When removing generator, make sure that drive spline adapter stays in transmission.

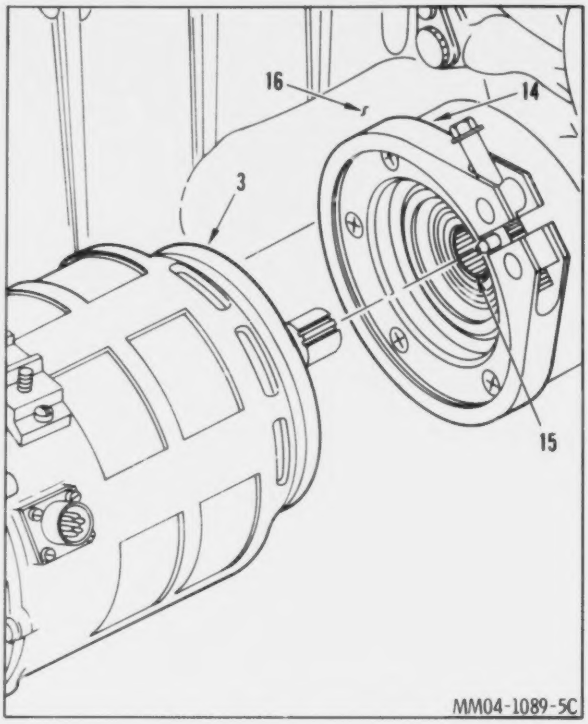
7. **Remove generator (3) from drive spline adapter (15) in transmission (16).**

B. **CLEANING**

Wipe QAD fitting and generator mounting area with a clean rag.

C. **INSPECTION**

1. **Check QAD fitting and generator for nicks, scratches, wear, and damaged spline.**
2. **Check generator and QAD fitting for cracks.** None allowed.
3. **Check generator seal on spline adapter for seepage.** None allowed.
4. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).
5. **Check connector for cracks, broken connections, bent pins, or damaged threads.** No cracks allowed. Thread damage not to exceed 50 percent of one thread (TM 55-1500-323-24).
6. **Check generator drive spline and adapter spline for damage and wear.** None allowed.
7. **Check power feeder wires for any chafing damage between the No. 1 generator and the electrical power center.** None allowed (TM 55-1500-323-24).



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D. INSTALLATION

CAUTION

If alinement pin on transmission is not properly alined with the hole in generator, generator and transmission may be damaged. Make sure alinement pin is in hole and generator is flush against transmission before torquing QAD fitting.

1. **Install generator (3) in transmission (16).**

   a. Position fitting (14) so bolt (17) is centered with alinement pin (18).

   NOTE

   Make sure that drive spline adapter is installed in main transmission before installing generator.

   b. Position generator (3) so hole (19) is alined with alinement pin (18).

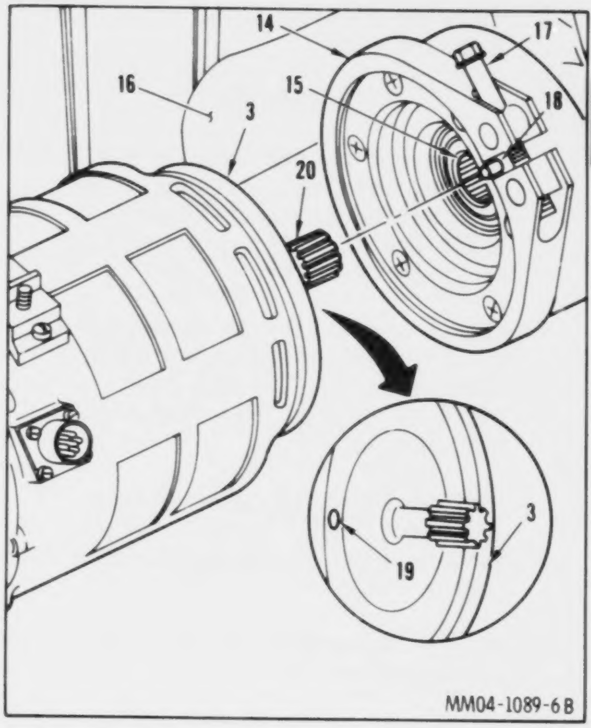
   c. One person support generator (3).

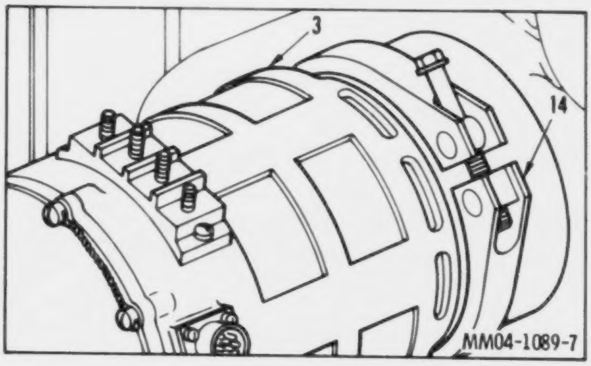
   d. Insert generator spline (20) in transmission drive spline adapter (15).

   CAUTION

   Hold the generator flush and in alinement during next step. **DO NOT USE QAD FITTING TO PULL UP GENERATOR.**

2. **Tighten fitting (14).** Seat fitting (14) evenly around generator (3). Tap in place.





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9-5-2. AC GENERATOR NO. 1 REMOVAL/INSTALLATION (cont) 9-5-2

NOTE

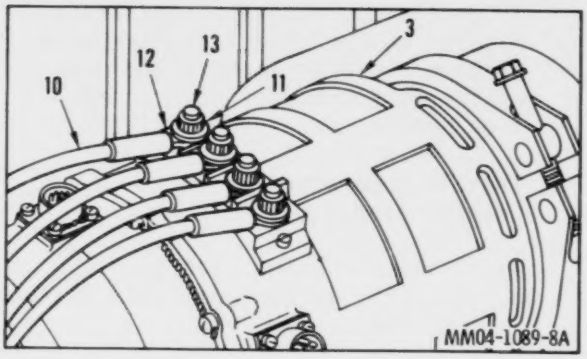
Wait 20 to 30 minutes.

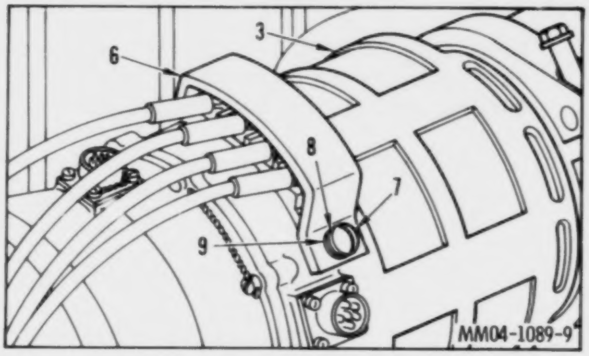
3. **Torque fitting (14) to 125 INCH-POUNDS.**
4. **Inspect (TI).**
5. **Lockwire fitting (14).** Use lockwire (E29).

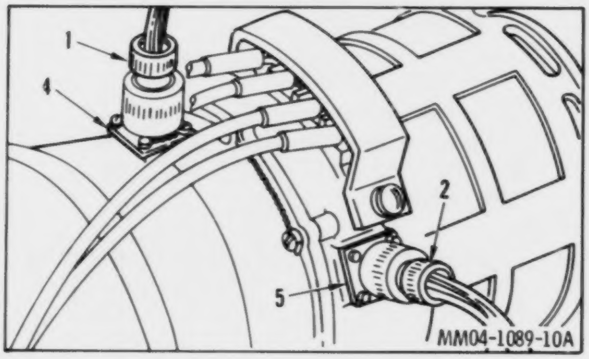
CAUTION

To prevent possible equipment damage, terminal wires must be reconnected at exact stud positions identified during generator removal,

6. **Attach wires (10) to generator (3).** Install identified wires (10), terminal lugs (12) and four locknuts (11) on four terminal studs (13).
7. **Install terminal cover (6) on generator (3).** Install two flat washers (9), lock washers (8), and screws (7).
8. **Attach connectors P2 (1) and P3 (2) to generator (3).**
   - a. Attach connector P2 (1) to connector J2 (4).
   - b. Attach connector P3 (2) to connector J1 (5).
9. **Inspect (TI).**
10. **Perform AC electrical power generation operational check** (TM 55-1520-238-T).
11. **Secure access panel L200** (para 2-2-2).







END OF TASK

9-5-3. AC GENERATOR NO. 2 REMOVAL/INSTALLATION 9-5-3

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Wrench, Torque, 1/4 Drive	5120-00-542-4489

Materials/Parts:

(E29) Lockwire

Personnel Required:

68F10	Aircraft Electrician (2) One to assist
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

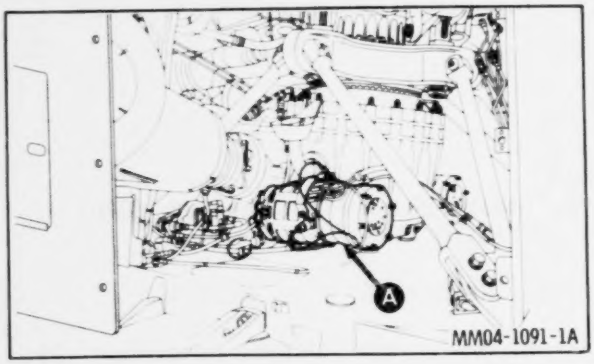
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panel R200 removed

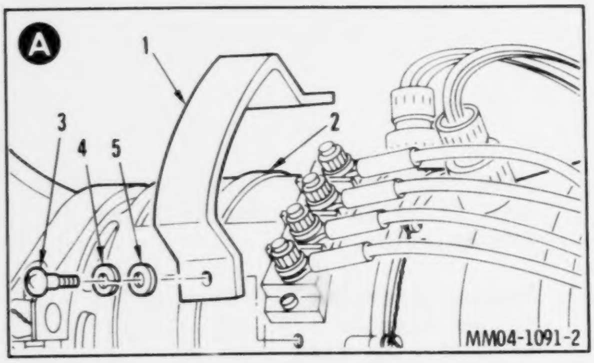
A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open six POWER circuit breakers on pilot aft circuit breaker panel.



3. Remove terminal cover (1) from generator (2). Remove two screws (3), lock washers (4), and flat washers (5).



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9-5-3. AC GENERATOR NO. 2 REMOVAL/INSTALLATION (cont) 9-5-3

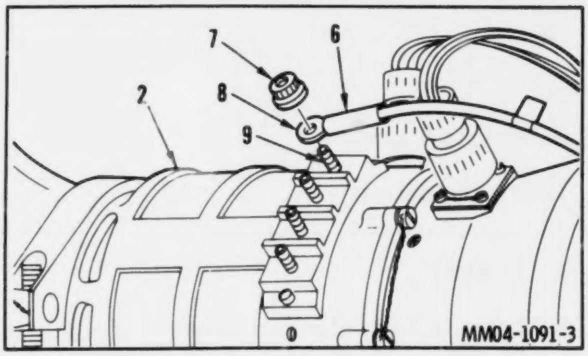
NOTE

Identify each wire and terminal during removal for proper placement during installation

4. **Detach wires (6) from generator (2).**

   a. Identify wires (6).

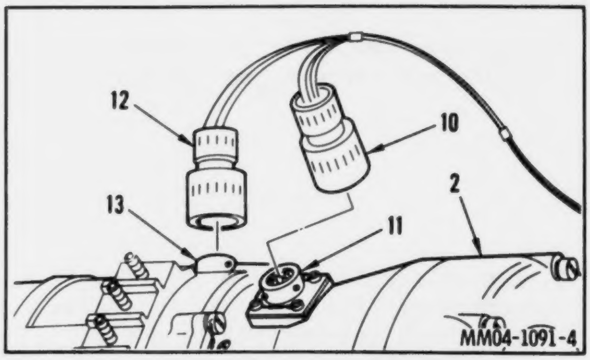
   b. Remove four locknuts (7) and terminal lugs (8) from four studs (9).



5. **Detach connectors P9 (10) and P8 (12) from generator (2).**

   a. Detach connector P9 (10) from connector J1 (11).

   b. Detach connector P8 (12) from connector J2 (13).



6. **Loosen quick-attach/detach (QAD) fitting (14).**

   a. Remove and discard lockwire.

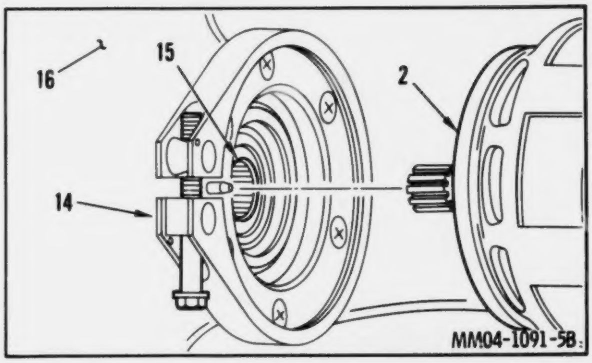
   b. One person support generator (2).

   c. Loosen fitting (14).

NOTE

When removing generator, make sure that drive spline adapter stays in transmission.

7. **Remove generator (2) from drive spline adapter (15) in transmission (16).**



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9-5-3. AC GENERATOR NO. 2 REMOVAL/INSTALLATION (cont) 9-5-3

B. CLEANING

Wipe QAD fitting and generator mounting area with a clean rag.

C. INSPECTION

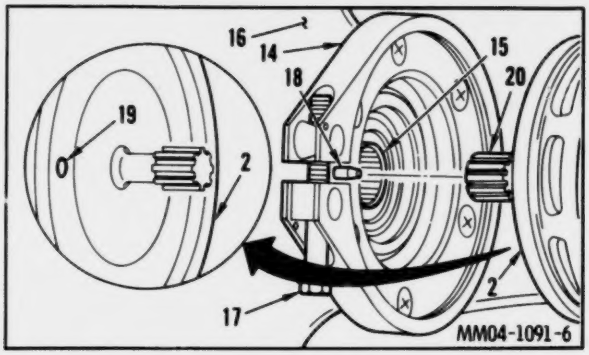
1. Check QAD fitting and generator for nicks, scratches, wear, and damaged spline.
2. Check generator and QAD fitting for cracks. None allowed.
3. Check generator seal on spline adapter for seepage. None allowed.
4. Check wires for wear, cuts, breaks, and damaged terminal lugs (TM 55-1500-323-24).
5. Check connector for cracks, broken connections, bent pins, or damaged threads. No cracks allowed. Thread damage not to exceed 50 percent of one thread (TM 55-1500-323-24).
6. Check generator drive spline and adapter spline for damage and wear. None allowed.
7. Check power feeder wires for any chafing damage between the No. 2 generator and the electrical power center. None allowed (TM 55-1500-323-24).

GO TO NEXT PAGE

D. INSTALLATION

CAUTION

If alinement pin on transmission is not properly alined with the hole in generator, generator and transmission may be damaged. Make sure alinement pin is in hole and generator is flush against transmission before torquing QAD fitting.



1. **Install generator (2) in transmission (16).**
   - a. Position fitting (14) so gap in fitting is centered with alinement pin (18).
   - b. Position generator (2) so hole (19) is alined with pin (18).
   - c. One person support generator (2).
   - d. Insert generator spline (20) in adapter (15).

CAUTION

Hold the generator flush and in alinement during next step. **DO NOT USE QAD FITTING TO PULL UP GENERATOR.**

2. **Tighten fitting bolt (17).** Seat fitting (14) evenly around generator (2). Tap in place.

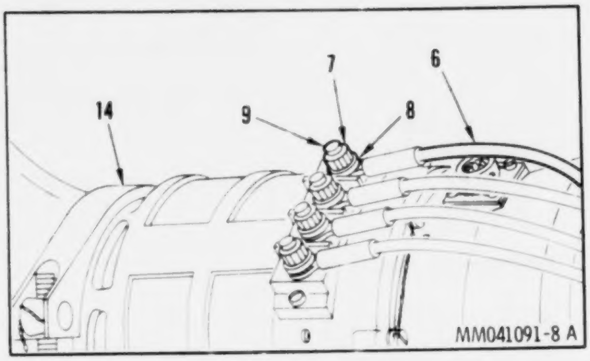
GO TO NEXT PAGE

9-5-3. AC GENERATOR NO. 2 REMOVAL/INSTALLATION (cont) 9-5-3

NOTE

Wait 20 to 30 minutes.

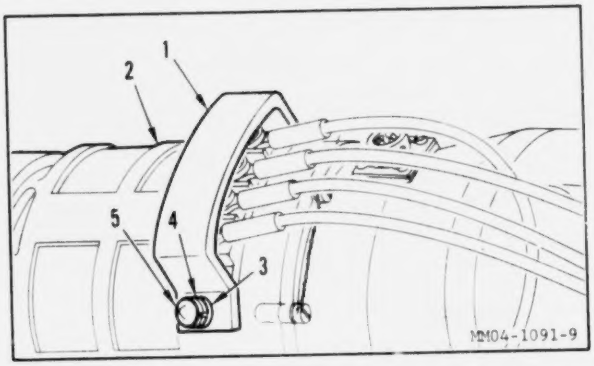
3. **Retorque fitting bolt (17) to 125 INCH-POUNDS.**
4. **Inspect (TI).**
5. **Lockwire fitting (14).** Use lockwire (E29).



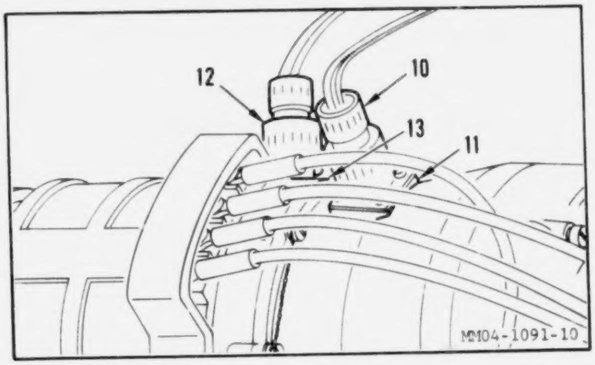
CAUTION

To prevent possible equipment damage, terminal wires must be reconnected at exact stud positions identified during generator removal.

6. **Attach wires (6) to generator (2).** Install identified terminal lugs (8) and four locknuts (7) on four terminal studs (9).



7. **Install terminal cover (1) on generator (2).** Install two flat washers (5), lock washers (4), and screws (3).
8. **Attach connectors P9 (10) and P8 (12) to generator (2).**
   a. Attach connector P9 (10) to connector J1 (11).
   b. Attach connector P8 (12) to connector J2 (13).



9. **Inspect (TI).**
10. **Perform AC power generation operational check** (TM 55-1520-238-T).
11. **Secure access panel R200** (para 2-2-2).

END OF TASK

9-5-4. GENERATOR CONTROL UNIT REMOVAL/INSTALLATION 9-5-4

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

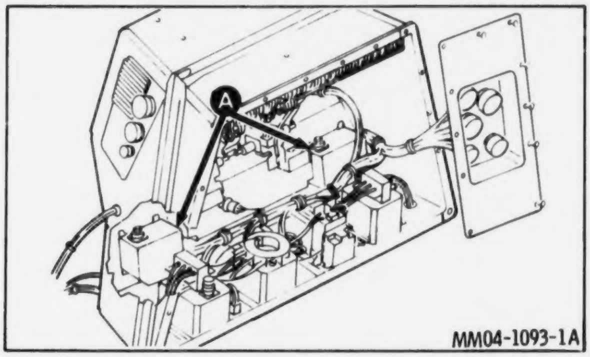
TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-44	Electrical power distribution box cover removed

NOTE

This task is typical for either generator control unit. The A1 generator control unit is on the left side of the electrical power distribution box. The A2 generator control unit is on the right.



MM04-1093-1A

A. REMOVAL

1. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**

2. **Open six POWER circuit breakers on pilot aft circuit breaker panel.**

GO TO NEXT PAGE

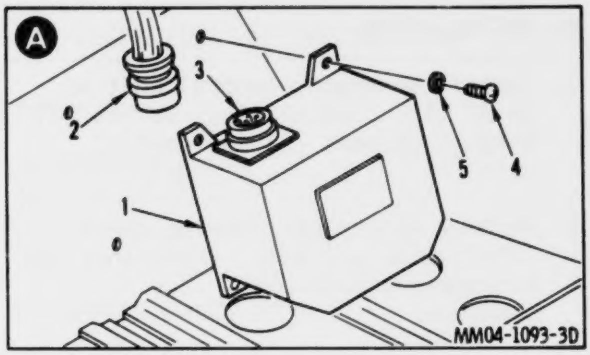
9-5-4. GENERATOR CONTROL UNIT REMOVAL/INSTALLATION (cont) 9-5-4

3. **Remove generator control unit A1 or A2 (1) from electrical power distribution box.**

   a. Detach connector P1 or P7 (2) from connector J1 (3).

   b. Remove four screws (4) and washers (5) from control unit (1).

   c. Remove control unit (1) from the power distribution box.



B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

1. **Check connector for cracks, broken connections, bent pins, or damaged threads.** No cracks allowed. Thread damage not to exceed 50 percent of one thread (TM 55-1500-323-24).

2. **Check wires for wear, cuts, and breaks** (TM 55-1500-323-24).

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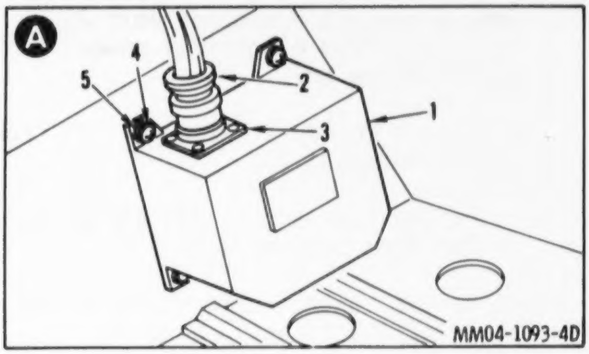
9-5-4. GENERATOR CONTROL UNIT REMOVAL/INSTALLATION (cont) 9-5-4



D. INSTALLATION

1. **Install generator control unit A1 or A2 (1).** Install four screws (4) through washers (5) and control unit (1).

2. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. **Attach connector P1 or P7 (2) to connector J1 (3) on generator control unit A1 or A2 (1).**

4. **Inspect (TI).**

5. **Install power distribution box cover** (para 2-3-44).

6. **Perform AC power generation** operational check (TM 55-1520-238-T).

END OF TASK

9-5-5. TRANSFORMER-RECTIFIER NO. 1 REMOVAL/INSTALLATION 9-5-5

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panel L200 and L165 removed

A. REMOVAL

1. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**

2. **Open six POWER circuit breakers on pilot aft circuit breaker panel.**

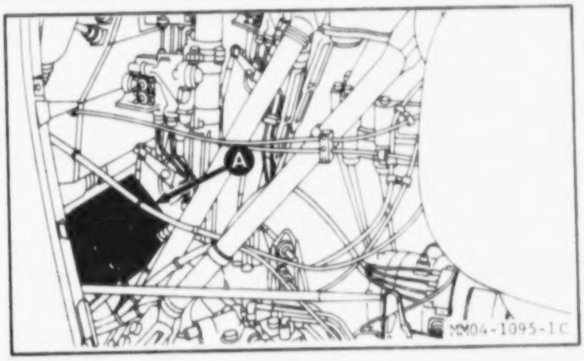
NOTE

Identify each wire and terminal during removal, for proper placement during installation.

3. **Detach wires (1) from positive and negative terminals (2) of transformer-rectifier (3).**

   a. Identify wires (1).

   b. Remove two nuts (4), two washers (5), and terminal lugs (6).



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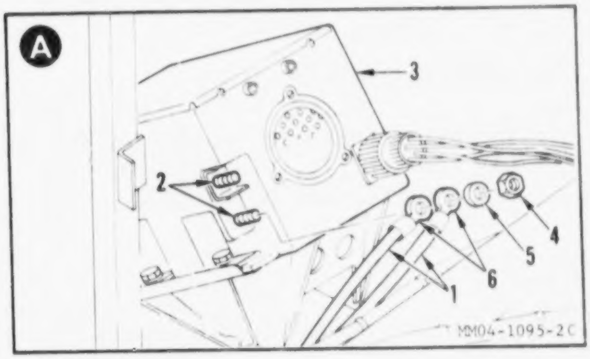

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9-5-5. TRANSFORMER-RECTIFIER NO. 1 REMOVAL/INSTALLATION (cont) 9-5-5

4. **Remove three clamps (12) from main transmission left forward support strut (13).** Remove nut (14), washer (15), and screws (16) from clamps (12).

5. **Remove transformer-rectifier (3) from bracket (7).**

   a. Detach connector P6 (8) from connector J1 (9).

   b. Remove four bolts (10) and washers (11).

B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

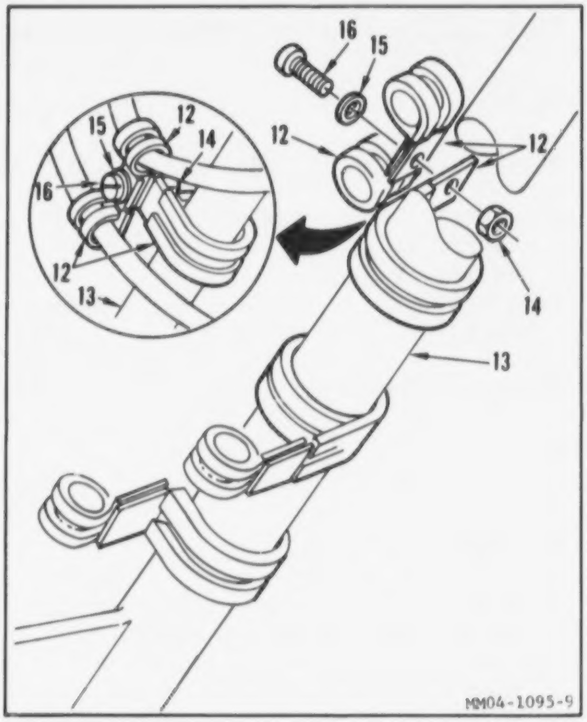
C. INSPECTION

1. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).

2. **Check connector for cracks, broken connections, bent pins, or damaged threads.** No cracks allowed. Thread damage not to exceed 50 percent of one thread.

D. INSTALLATION

1. **Install transformer-rectifier No. 1 (3) bracket (7).** Install four washers (11) and bolts (10).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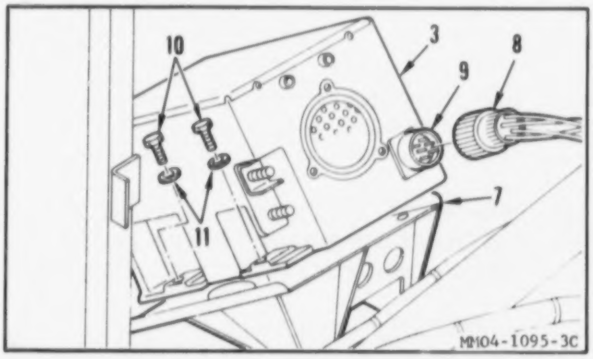
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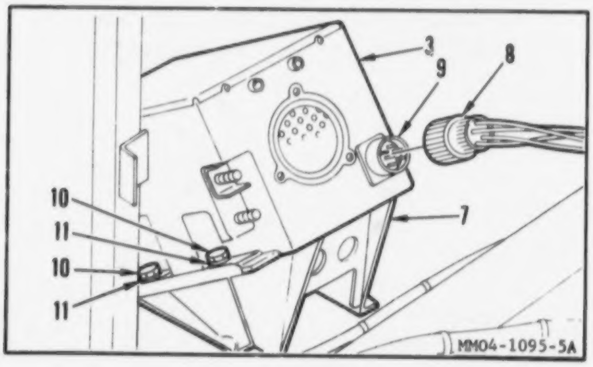
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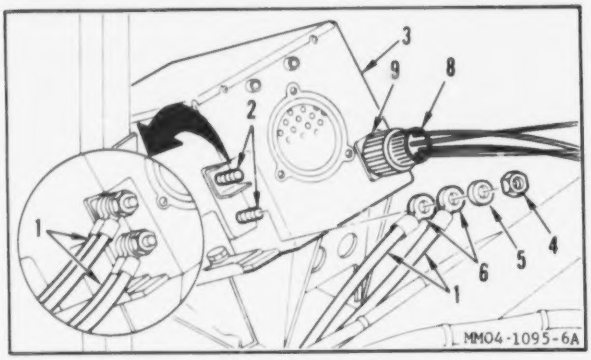
9-5-5. TRANSFORMER-RECTIFIER NO. 1 REMOVAL/INSTALLATION (cont) 9-5-5

2. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. **Attach wires (1) to positive and negative terminals (2) of transformer-rectifier (3).**

    a. Install identified terminal lugs (6), two washers (5), and two nuts (4).

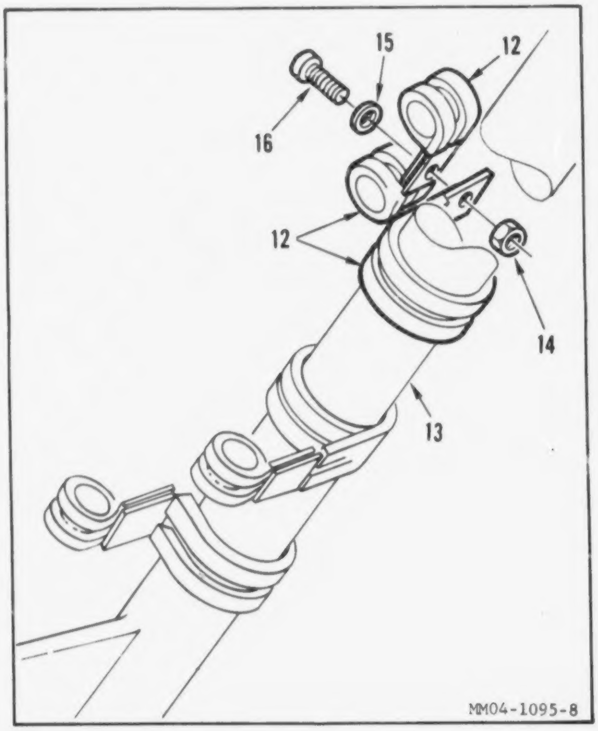
    b. Attach connector P6 (8) to connector J1 (9).



4. **Install three clamps (12) on main transmission left forward strut (13).**

    a. Install screw (16) through washer (15) and clamps (12).

    b. Hold screw (16). Install nut (14).



5. **Inspect (TI).**

6. **Perform DC power generation operational check** (TM 55-1520-238-T).

7. **Secure access panel L200 and L165** (para 2-2-2).

END OF TASK

9-5-6. TRANSFORMER-RECTIFIER NO. 2 REMOVAL/INSTALLATION 9-5-6

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panel R200 removed

A. REMOVAL

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

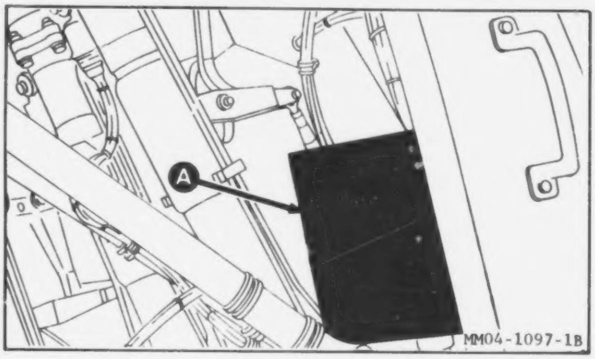
2. **Open six POWER circuit breakers on pilot aft circuit breaker panel.**

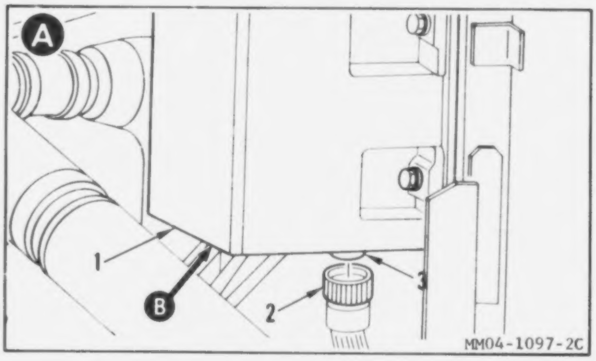
3. **Detach connector P12 (2) from connector J1 (3) and four wires (4) from positive and negative terminals (5) on transformer-rectifier (1).**

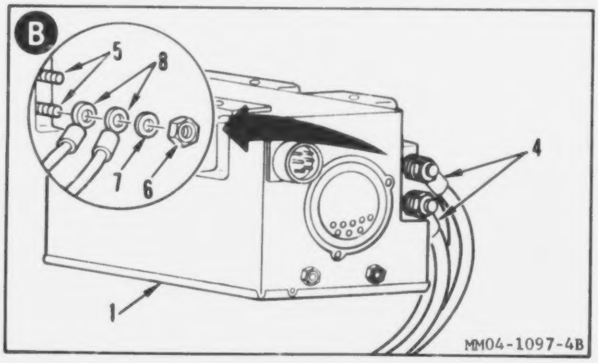
   a. Detach connector P12 (2) from connector J1 (3).

   b. Identify four wires (4).

   c. Remove two nuts (6), lock washers (7), and four terminals lugs (8).







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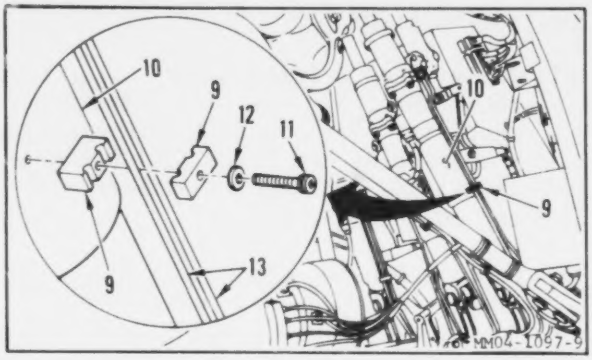
9-5-6. TRANSFORMER-RECTIFIER NO. 2 REMOVAL/INSTALLATION (cont) 9-5-6

4. **Remove clamp block (9) from hydraulic lines of longitudinal servoactuator (10).**

   a. Remove hex screw (11) and washer (12).

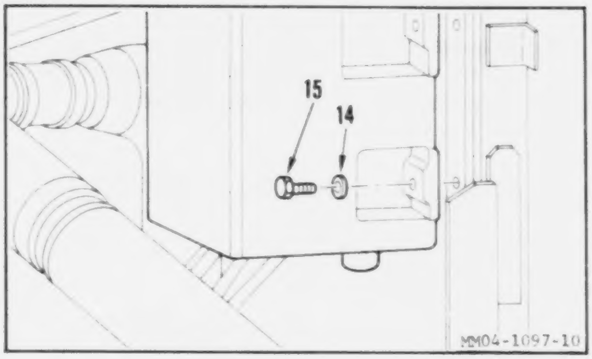
   b. Remove clamp block (9) from longitudinal servoactuator (10) and hydraulic lines (13).



NOTE

Identify each wire and terminal during removal for proper placement during installation.

5. **Remove No. 2 transformer-rectifier (1).** Remove four bolts (15) and washers (14).



B. **CLEANING**

Clean all removed parts, mounting surfaces, and attaching hardware (para 1-5-36).

C. **INSPECTION**

1. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).

2. **Check connector for cracks, broken connections, bent pins, or damaged threads.** No cracks allowed. Thread damage not to exceed 50 percent of one thread (TM 55-1500-323-24).

GO TO NEXT PAGE

9-5-6. TRANSFORMER-RECTIFIER NO. 2 REMOVAL/INSTALLATION (cont) 9-5-6

D. INSTALLATION

1. **Install No. 2 transformer-rectifier (1).** Position transformer-rectifier (1). Install two outboard washers (14) and bolts (15) before installing two inboard washers (14) and bolts (15).

2. **Perform bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. **Attach connector P12 (2) and four wires (4) to positive and negative terminals (5) of transformer-rectifier (1).**

   a. Install identified terminal lugs (8), wires (4), two washers (7), and two nuts (6) on two terminals (5).

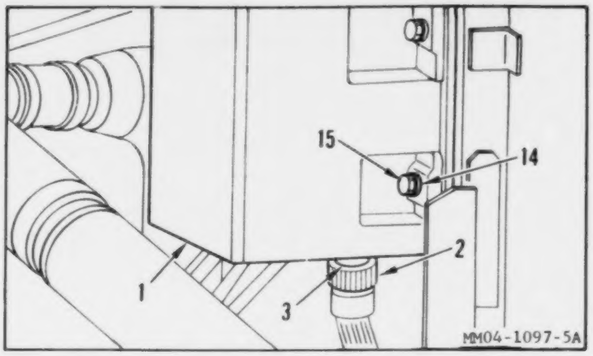
   b. Attach connector P12 (2) to connector J1 (3).

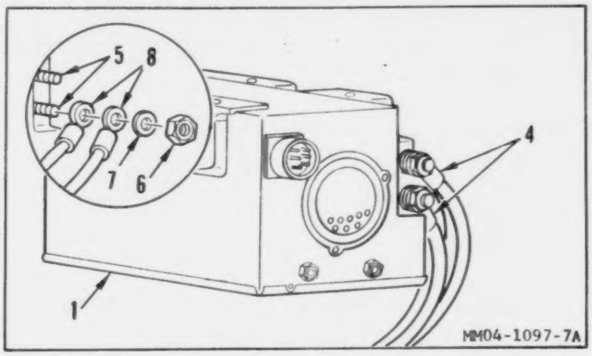
4. **Secure longitudinal servoactuator (10) hydraulic lines (13).** Install hex screw (11) through washer (12), and clamp block (9), into servoactuator (10).

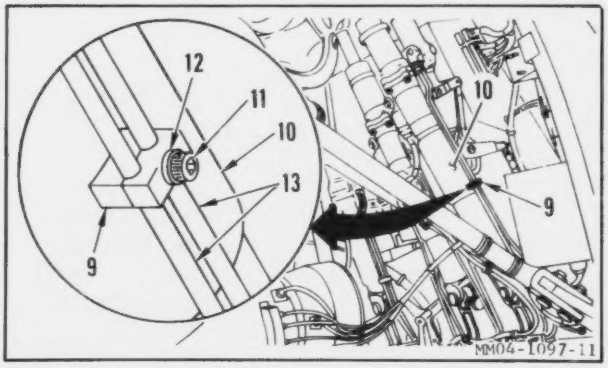
5. **Inspect (TI).**

6. **Secure access panel R200** (para 2-2-2).

7. **Perform DC power generation operational check** (TM 55-1520-238-T).







END OF TASK

9-5-7. GENERATOR NO. 1 CONTACTOR RELAY REMOVAL/INSTALLATION 9-5-7

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-44	Electrical power distribution box cover removed

A. **REMOVAL**

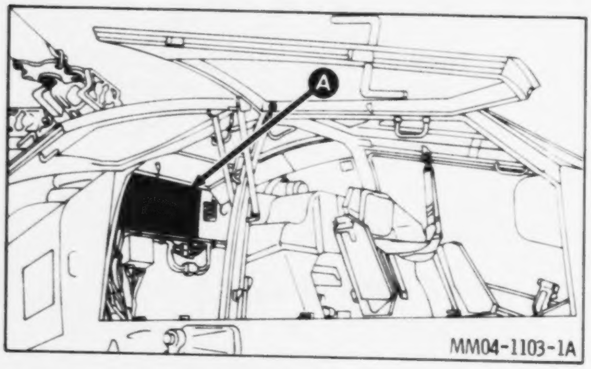
1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

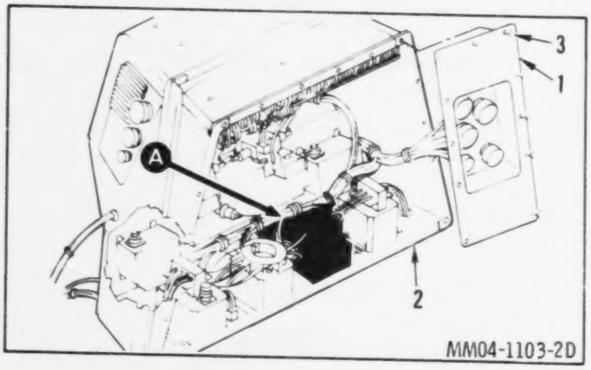
2. **Open six POWER circuit breakers on pilot aft circuit breaker panel.**

CAUTION

Do not lean or pull on connector panel once removed from electrical power distribution box. Damage to connector panel wiring could result if excessive stress is applied.

3. **Remove electrical power distribution box connector panel (1) from electrical power distribution box (2).** Unlock 7 camloc fasteners (3) and move panel (1) gently to one side.





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3. **Detach connector P5 (4) from contactor relay (5).** Detach connector P5 (4) from connector K1J1 (6).

4. **Remove upper terminal shield (7) from relay (5).** Loosen two captive screws (8).

NOTE

Identify each wire and terminal during removal, for proper placement during installation.

5. **Detach wires (9) from terminal studs A2, B2, and C2 (10).**

   a. Identify wires (9).

   b. Remove three nuts (11), lock washers (12), flat washers (13), and seven terminal lugs (14) from terminal studs (10).

6. **Remove lower terminal shield (15) from relay (5).**

7. **Detach wires (16) from terminal studs A1, B1, and C1 (17).**

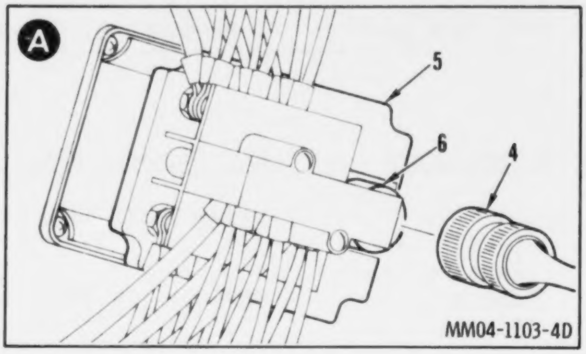
   a. Identify wires (16).

   b. Remove three nuts (18), lock washers (19), flat washers (20), and nine terminal lugs (21) from three terminal studs (17).

8. **Detach wires (22) from terminal studs A3, B3, and C3 (23).**

   a. Identify wires (22).

   b. Remove three nuts (24), lock washers (25), flat washers (26), and nine terminal lugs (27) from three terminal studs (23).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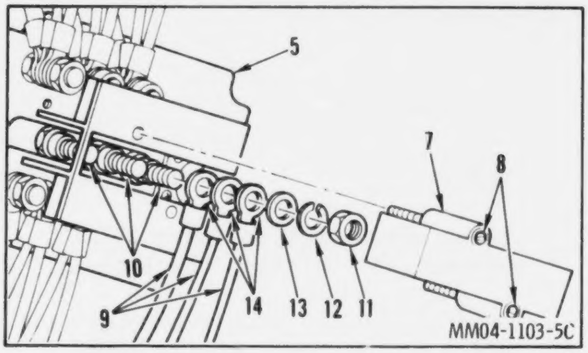
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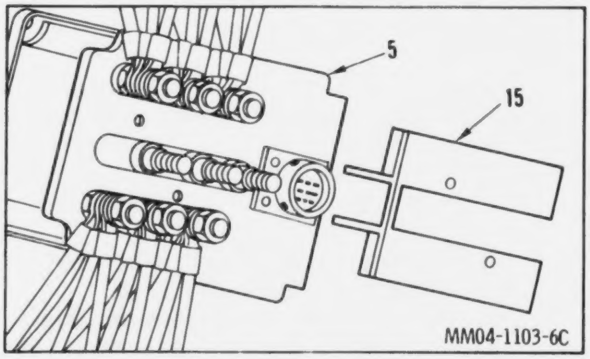
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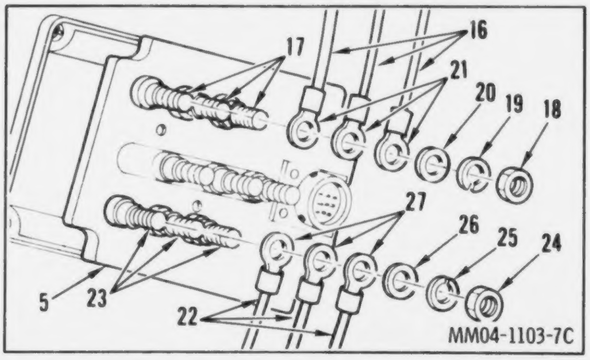
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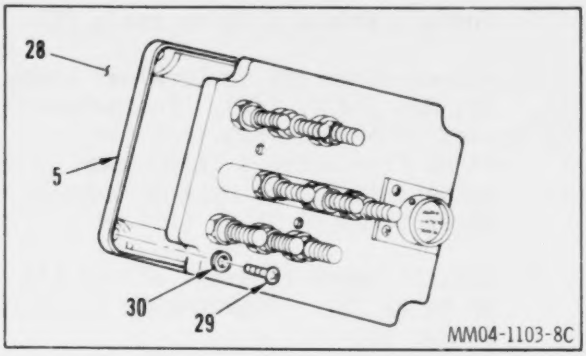
9-5-7. GENERATOR NO. 1 CONTACTOR RELAY REMOVAL/INSTALLATION (cont) 9-5-7

9. **Remove relay (5) from power distribution box (28).** Remove four screws (29) and washers (30).

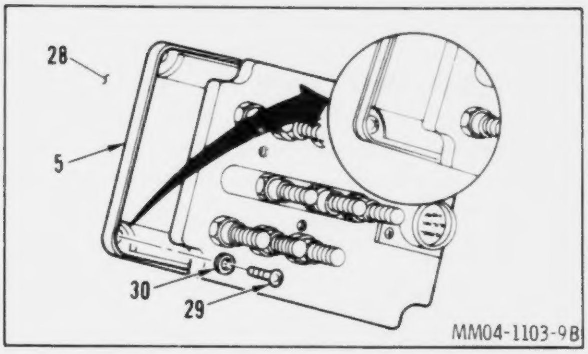


B. **CLEANING**

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. **INSPECTION**

1. **Check mounting area of relay for stripped or damaged threads.** Damage not to exceed 50 percent of one thread.



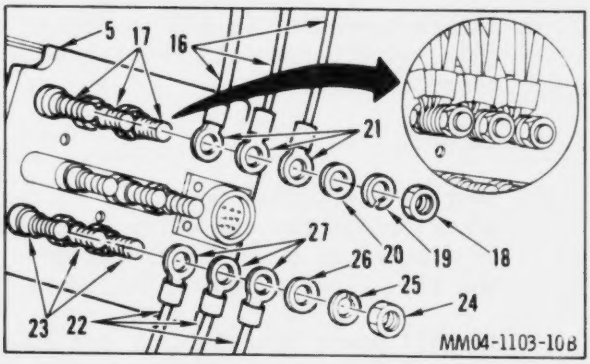
2. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).

3. **Check connector for cracks, broken connections, bent pins, or damaged threads.** No cracks allowed. Thread damage not to exceed 50 percent of one thread (TM 55-1500-323-24).

D. **INSTALLATION**

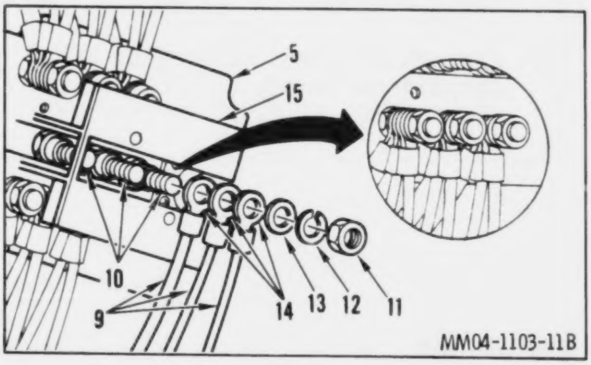
1. **Install relay (5) in box (28).** Install four screws (29) through four washers (30) and relay (5) into box (28).

2. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.



3. **Attach wires (22) to terminal studs A3, B3, and C3 (23).** Install identified terminal lugs (21), three flat washers (26), lock washers (25), and nuts (24) on three terminal studs (23).

4. **Attach wires (16) to terminal studs A1, B1, and C1 (17).** Install identified terminal lugs (21), three flat washers (20), lock washers (19), and nuts (18) on three terminal studs (17).



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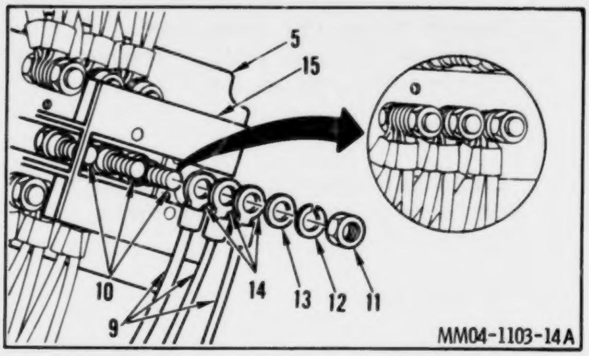
9-5-7. GENERATOR NO. 1 CONTACTOR RELAY REMOVAL/INSTALLATION (cont) 9-5-7

5. **Install shield (15) on realy (5).**
6. **Attach wires (9) to terminal studs A2, B2, and C2 (10).** Install identified terminal lugs (14), three flat washers (13), lock washers (12), and nuts (11) on three terminal studs (10).
7. **Install upper terminal shield (7) on relay (5).** Tighten two screws (8).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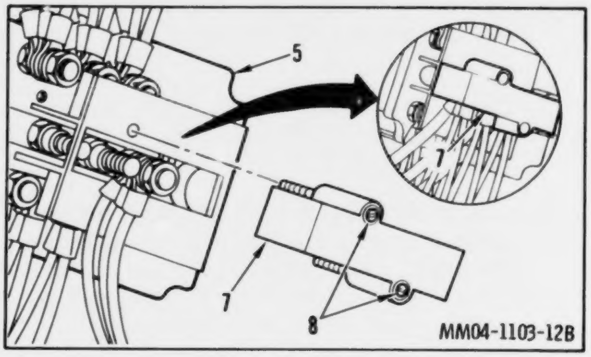
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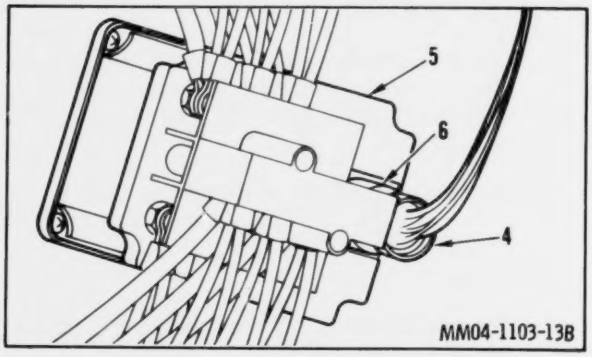
8. **Attach connector P5 (4) to relay (5).** Attach connector P5 (4) to connector K1J1 (6).
9. **Inspect (TI).**
10. **Install electrical power distribution box connector panel (1) on electrical power distribution box (2).** Lock 7 camloc fasteners.
11. **Install power distribution box cover** (para 2-3-44).
12. **Perform AC power generation operational check** (TM 55-1520-238-T).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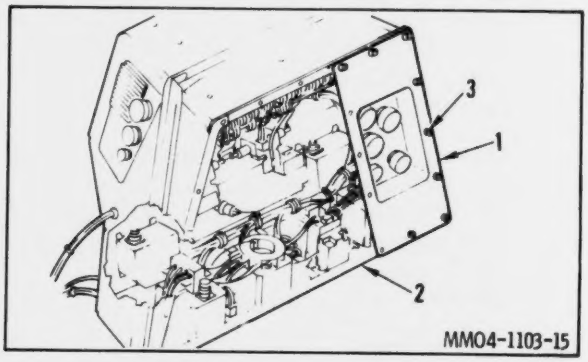
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END OF TASK

9-5-8. GENERATOR NO. 2 CONTACTOR RELAY REMOVAL/INSTALLATION 9-5-8

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

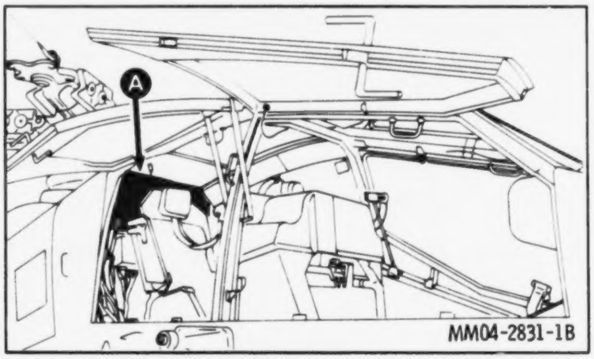
TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-44	Electrical power distribution box cover removed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.
2. Open six POWER circuit breakers on pilot aft circuit breaker panel.



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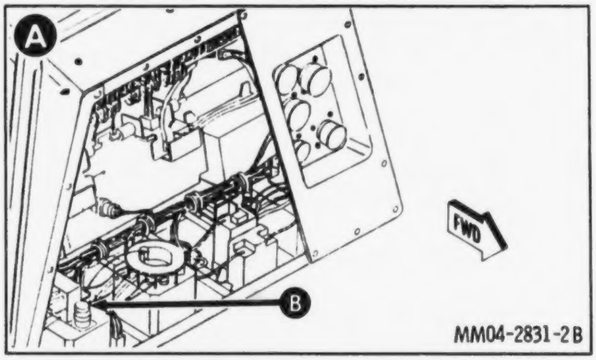

MM04-2831-2B

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9-5-8. GENERATOR NO. 2 CONTACTOR RELAY REMOVAL/INSTALLATION (cont) 9-5-8

3. **Detach connector P11 (1) from relay (2).** Detach connector P11 (1) from connector K2J1 (3).

4. **Remove upper terminal shield (4) from relay (2).** Loosen two captive screws (5).

NOTE

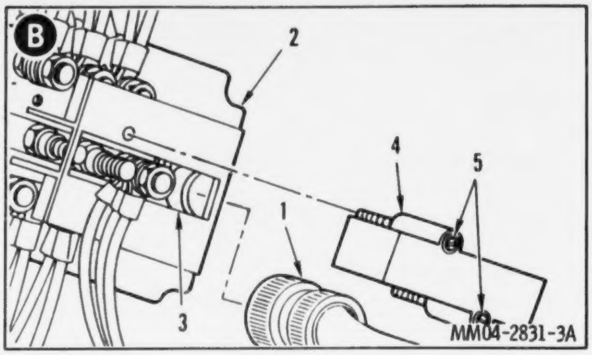
Identify each wire and terminal during removal, for proper placement during installation.

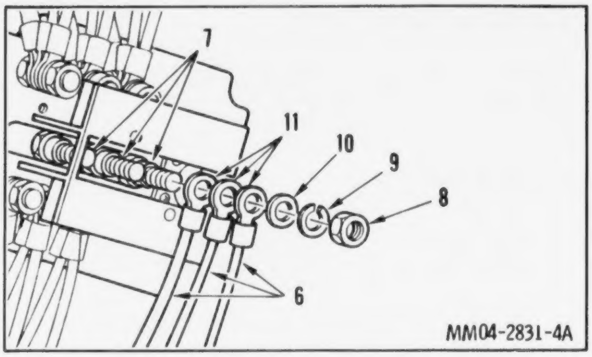
5. **Detach wires (6) from terminal studs A2, B2, and C2 (7).**
   a. Identify wires (6).
   b. Remove three nuts (8), lock washers (9), flat washers (10), and terminal lugs (11) from three terminal studs (7).

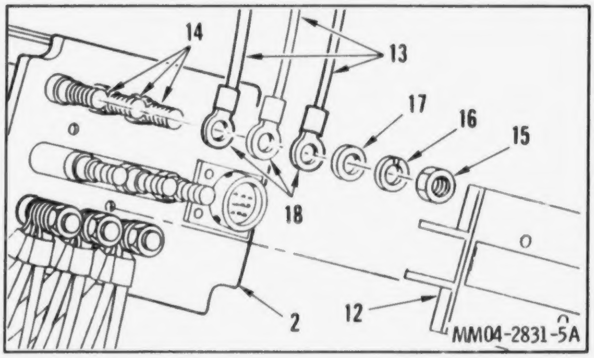
6. **Remove lower terminal shield (12) from contactor (2).**

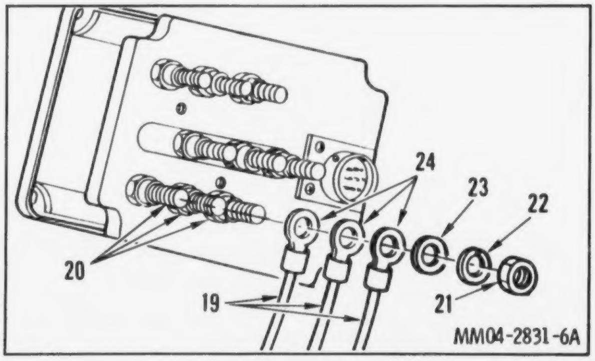
7. **Disconnect wires (13) from terminal studs A1, B1, and C1 (14).**
   a. Identify wires (13).
   b. Remove three nuts (15), lock washers (16), flat washers (17), and terminal lugs (18) from three studs (14).

8. **Detach wires (19) from terminal studs A3, B3, and C3 (20).**
   a. Identify wires (19).
   b. Remove three nuts (21), lock washers (22), flat washers (23), and terminal lugs (24) from three studs (20).









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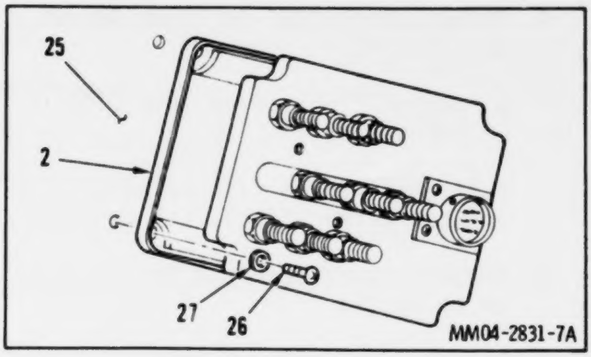
9-5-8. GENERATOR NO. 2 CONTACTOR RELAY REMOVAL/INSTALLATION (cont) 9-5-8

9. **Remove (2) from power distribution box (25).** Remove four screws (26) and washers (27).



B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

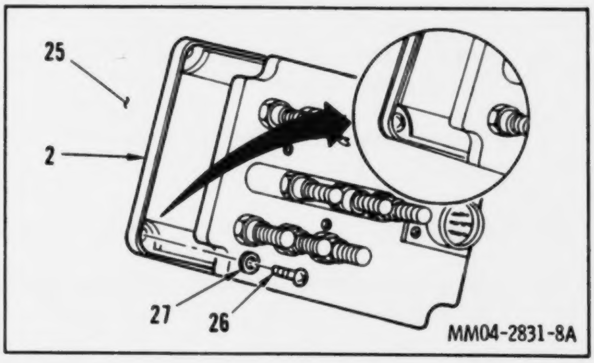
1. **Check mounting area of for stripped or damaged threads.** Damage not to exceed 50 percent of one thread.

2. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).

3. **Check connector for cracks, broken connections, bent pins, or damaged threads.** No cracks allowed. Thread damage not to exceed 50 percent of one thread (TM 55-1500-323-24).

D. INSTALLATION

1. **Install relay (2) in box (25).** Install four washers (26) and screws (27).

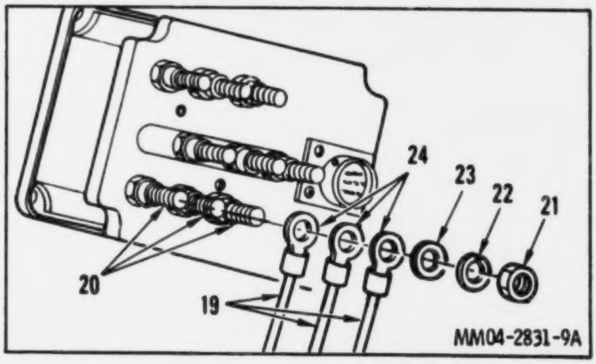


2. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. **Attach wires (19) to studs A3, B3, and C3 (20).**

   a. Install identified lugs (24) on studs (20)

   b. Install three flat washers (23), lock washers (22), and nuts (21).



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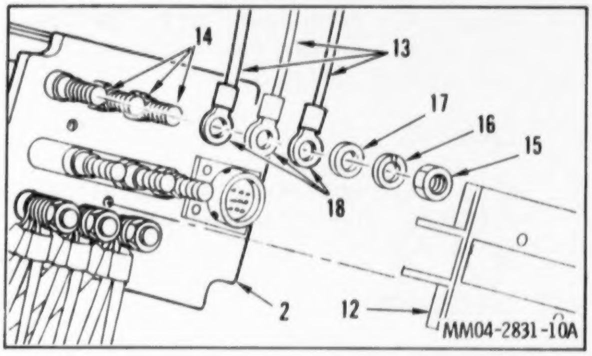
9-5-8. GENERATOR NO. 2 CONTACTOR RELAY REMOVAL/INSTALLATION (cont) 9-5-8

4. **Attach wires (13) to studs A1, B1, and C1 (14).**
   a. Install identified lugs (18) on studs (14).
   b. Install three flat washers (17), lock washers (16), and nuts (15).
5. **Install lower terminal shield (12) on relay (2).**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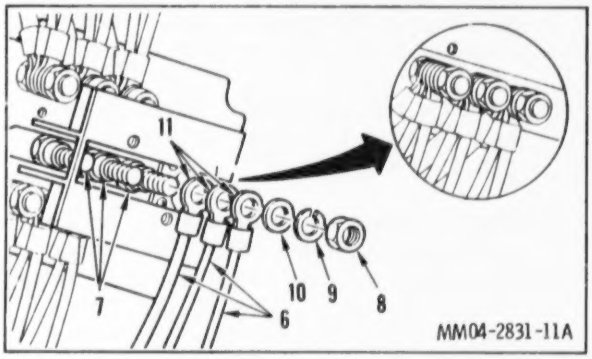
6. **Attach wires (6) to studs A2, B2, and C2 (7).**
   a. Install identified lugs (11) on studs (7).
   b. Install three flat washers (10), lock washers (9), and nuts (8).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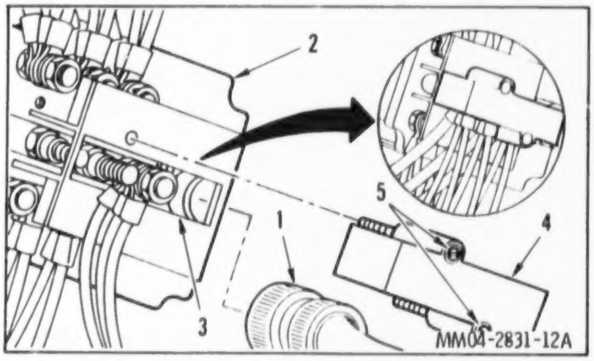
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7. **Install shield (4) on relay (2).** Tighten two screws (5).
8. **Attach connector P11 (1) to connector K2J1 (3).**
9. **Inspect (TI).**
10. **Install power distribution box cover** (para 2-3-44).
11. **Perform AC power generation operational check** (TM 55-1520-238-T).

END OF TASK

9-5-9. BLADE DE-ICE REMOTE CONTROL CIRCUIT BREAKER RELAY REMOVAL/INSTALLATION 9-5-9

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

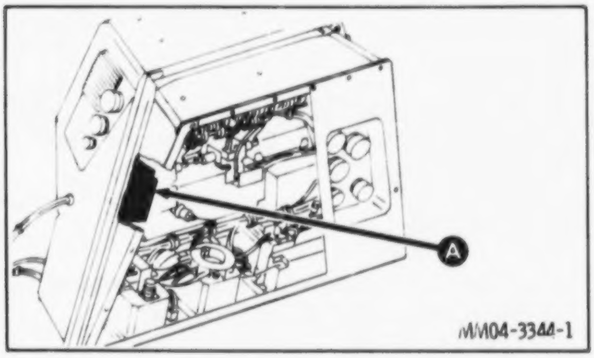
Ref	Condition
1-7-2	Helicopter safed
2-3-44	Electrical power distribution box cover removed

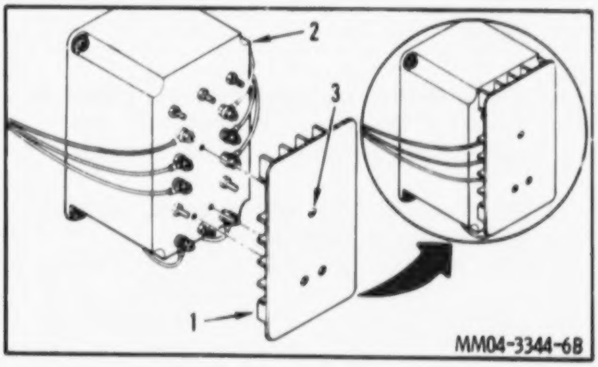
A. REMOVAL

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

2. **Open six POWER, BLADE DE-ICE, and BLADE DE-ICE CONTR circuit breakers on pilot aft circuit breaker panel.**

3. **Remove terminal shield (1) from remote control circuit breaker relay (2).** Loosen three captive screws (3).





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9-5-9. BLADE DE-ICE REMOTE CONTROL CIRCUIT BREAKER RELAY REMOVAL/INSTALLATION (cont) 9-5-9

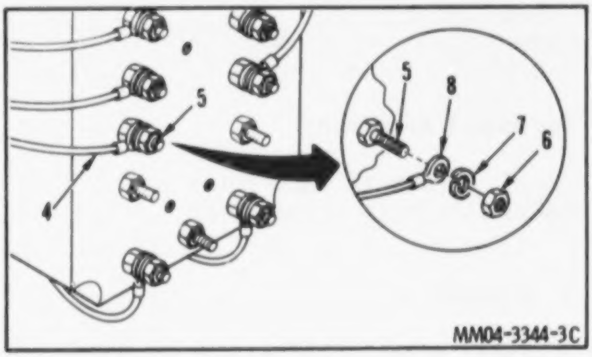
NOTE

- Identify each wire and terminal during removal for proper placement during installation.
- Step 4 is typical for removing all wires from terminal studs.

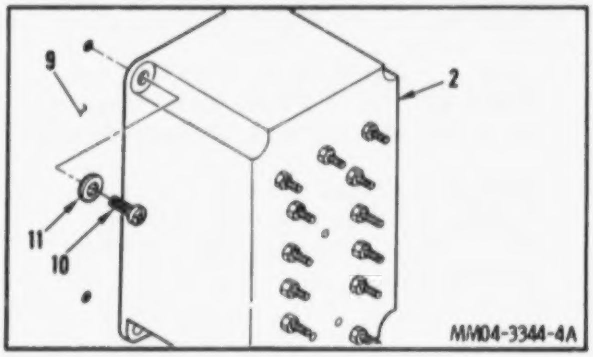
4. **Detach wires (4) from terminal studs (5).**

   a. Identify wires (4).

   b. Remove nut (6), lockwasher (7), and terminal lug (8) from stud (5).



5. **Remove relay (2) from power distribution box (9).** Remove four screws (10) and washers (11).



B. **CLEANING**

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. **INSPECTION**

1. **Check mounting area for stripped or damaged threads.** Damage not to exceed 50 percent of one thread.

2. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).

D. **INSTALLATION**

1. **Install remote control circuit breaker relay (2).** Install four washers (11) and four screws (10).

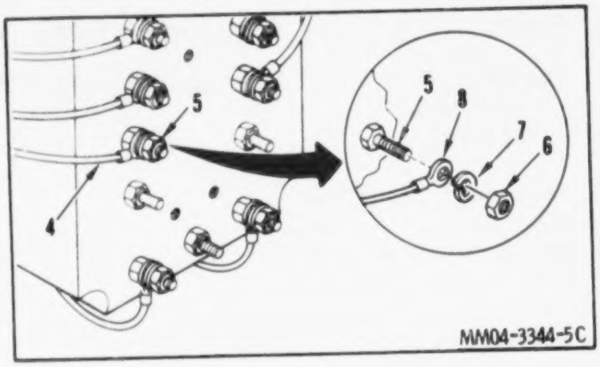
GO TO NEXT PAGE

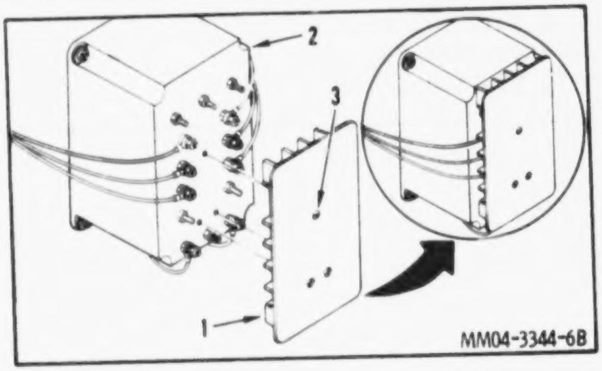
9-5-9. BLADE DE-ICE REMOTE CONTROL CIRCUIT BREAKER RELAY REMOVAL/INSTALLATION (cont)

NOTE

Step 2 is typical for installing all wires on terminal studs.

2. **Attach wires (4) to terminal studs (5).**
   a. Install identified wires (4) on terminal stud (5).
   b. Install terminal lug (8), lockwasher (7), and nut (6).
3. **Perform** electrical bonding check (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.
4. **Inspect** (TI).
5. **Install terminal shield (1) on remote control circuit breaker relay K3 (2).** Tighten three captive screws (3).
6. **Install** power distribution box cover (para 2-3-44).
7. **Perform** rotor blades de-ice operational check (TM 55-1520-238-T).





END OF TASK

9-5-10. EXTERNAL POWER MONITOR REMOVAL 9-5-10

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

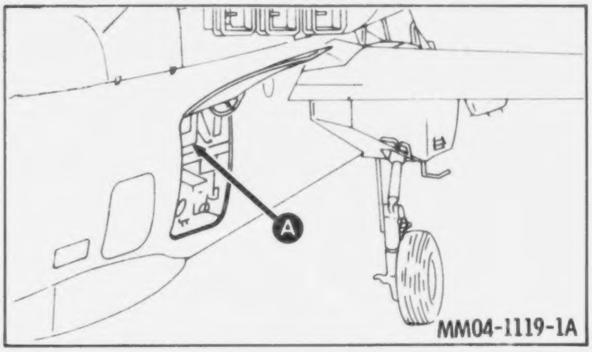
68F10 Aircraft Electrician

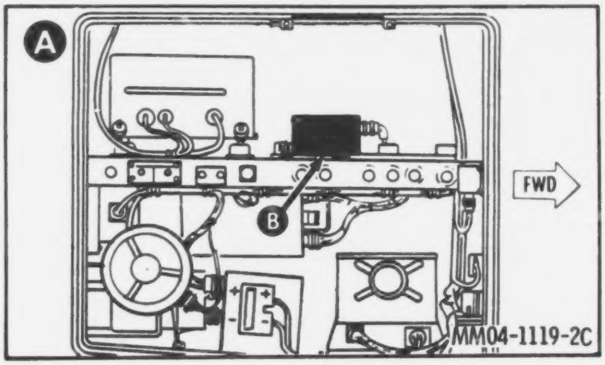
References:

TM 9-1230-476-20-1
TM 11-1520-238-23-1
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panel R295 opened
TM 11-1520-238-23-1	IFF computer removed
	TSEC/KY 28 communication security removed
	Video recorder removed
TM 9-1230-476-20-1	Air data processor (ADP) removed





A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open six POWER circuit breakers on pilot aft circuit breaker panel.

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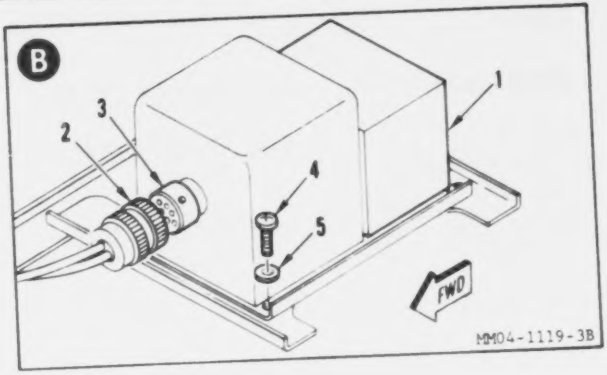
9-5-10. EXTERNAL POWER MONITOR REMOVAL (cont)



3. **Detach connector from external power monitor (1).** Detach connector P13 (2) from connector PM1J1 (3).

4. **Remove external power monitor (1).** Remove four screws (4) and washers (5).

B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

1. **Check mounting surface for stripped or damaged threads.** Damage not to exceed 50 percent of one thread.

2. **Check connector for cracks, broken connections, bent pins, or damaged threads.** No cracks allowed. Thread damage not to exceed 50 percent of one thread (TM 55-1500-323-24).

END OF TASK

9-5-11. EXTERNAL POWER MONITOR INSTALLATION 9-5-11

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

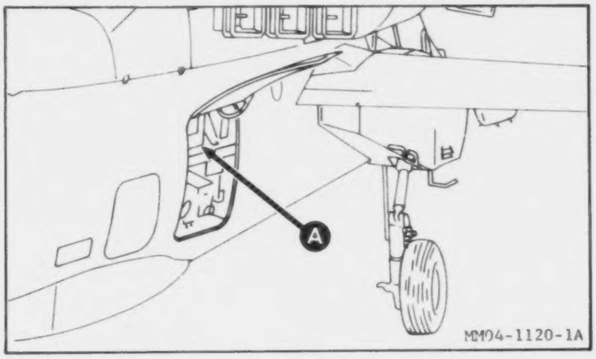
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

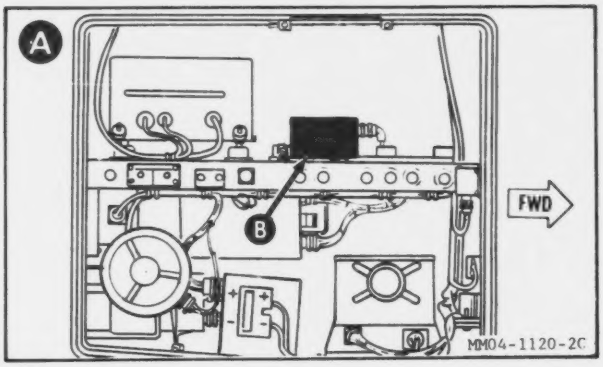
References:

TM 9-1230-476-20-1
TM 55-1520-238-T
TM 11-1520-238-23-1
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed





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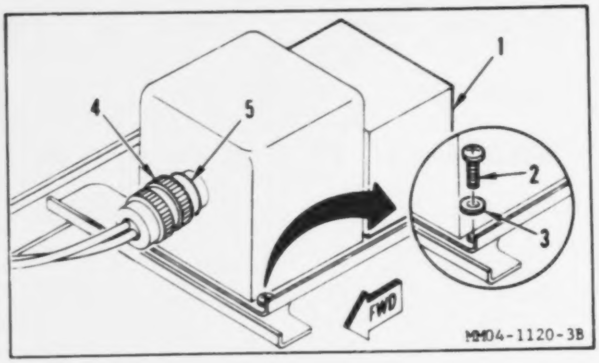
9-5-11. EXTERNAL POWER MONITOR INSTALLATION (cont) 9-5-11



1. **Install external power monitor (1).** Install four washers (3) and screws (2).
2. **Attach connector (4) to external power monitor (1).** Attach connector P13 (4) to connector PM1J1 (5).
3. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.
4. **Install ADP** (TM 9-1230-476-20-1).
5. **Insall TSEC/KY 28 communication security** (TM 11-1520-238-23-1).
6. **Install video recorder** (TM 11-1520-238-23-1).
7. **Install IFF computer** (TM 11-1520-238-23-1).
8. **Inspect (TI).**
9. **Secure aft avionics bay door R295** (para 2-2-2).
10. **Perform electrical power and ground service utility receptacle operational check** (TM 55-1520-238-T).

END OF TASK

9-5-12. EXTERNAL POWER CONTACTOR RELAY REMOVAL/INSTALLATION 9-5-12

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

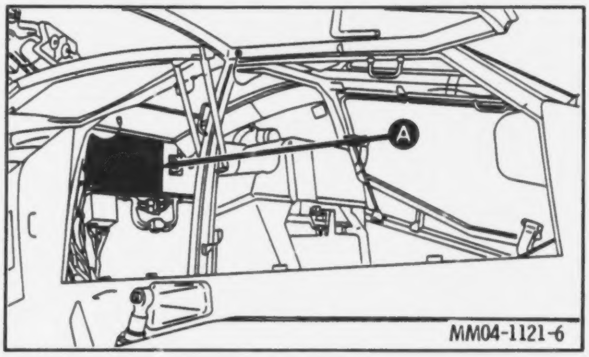
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

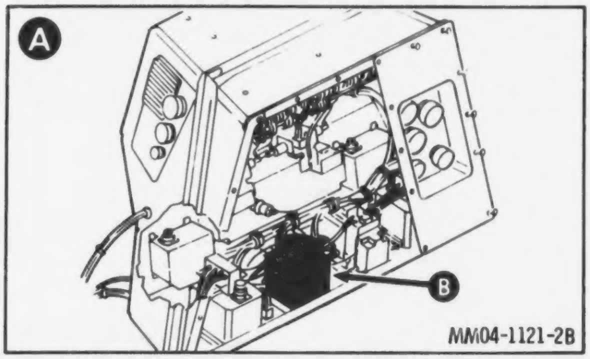
References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-44	External power distribution box cover removed





A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open six POWER circuit breakers on pilot aft circuit breaker panel.

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9-5-12. EXTERNAL POWER CONTACTOR RELAY REMOVAL/INSTALLATION (cont) 9-5-12

3. **Remove terminal shield (1) from external power relay (2).**

   a. Remove two screws (3) and two washers (4) from shield (1).

   b. Slide shield (1) away from relay (2).

NOTE

Identify each wire and terminal during removal, for proper placement during installation.

4. **Detach wires (5) from relay (2).**

   a. Identify wires (5).

   b. Remove seven nuts (6), lock washers (7), terminal lugs (8), and flat washers (9) from terminal studs A1, A2, A3, B2, B3, X1, and X2 (10).

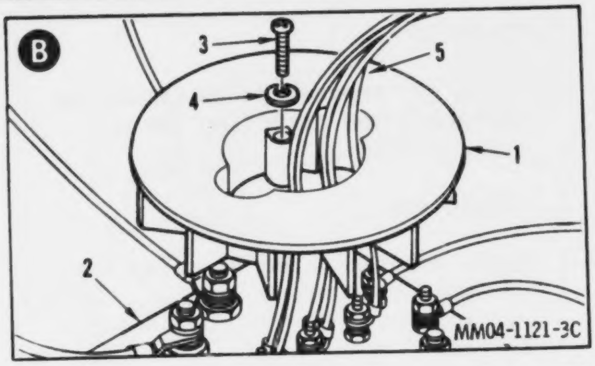
   c. Remove shield (1) from wires (5).

5. **Detach wires (11) from relay (2).**

   a. Identify wires (11).

   b. Remove six nuts (12), lock washers (13), terminal lugs (14), and flat washers (15) from terminal studs L1, L2, L3, T1, T2, and T3 (16).

6. **Remove relay (2).** Remove four screws (17) and washers (18).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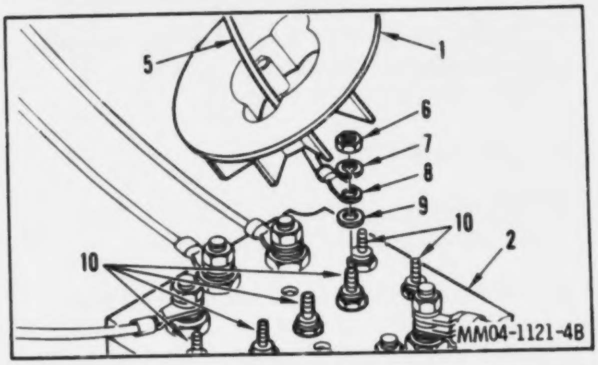
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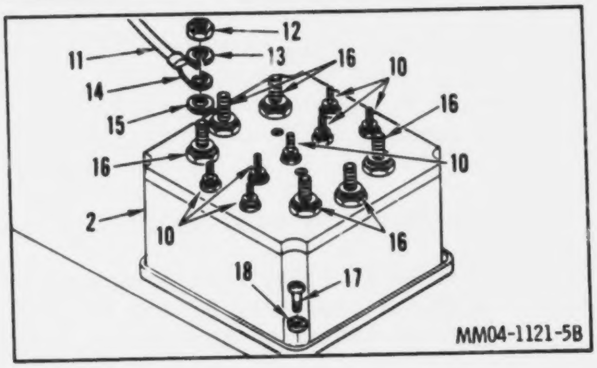
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B. CLEANING

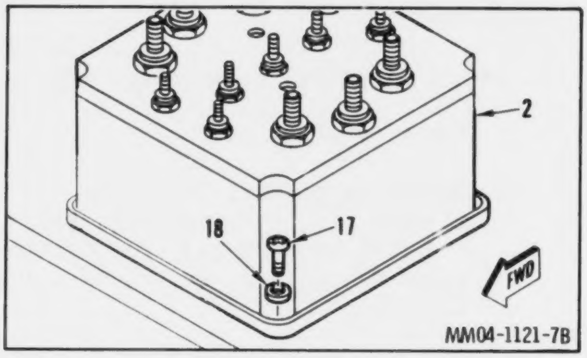
Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

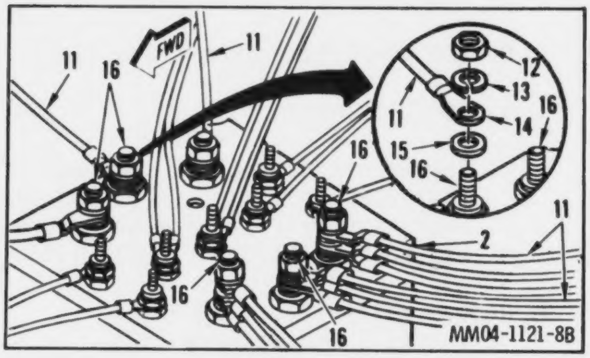
C. INSPECTION

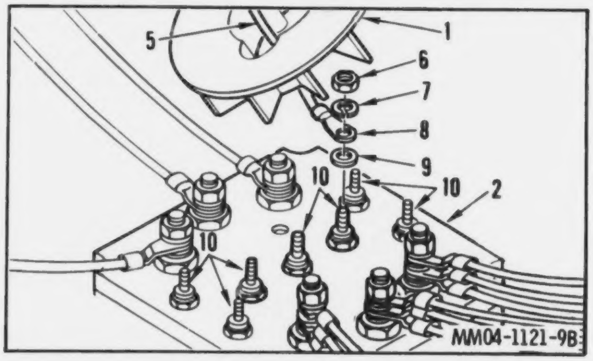
1. Check mounting area of relay for stripped or damaged threads. Damage not to exceed 50 percent of one thread.
2. Check wires for wear, cuts, breaks, and damaged terminal lugs (TM 55-1500-323-24).

D. INSTALLATION

1. Install relay (2). Install four screws (17) and washers (18).
2. Perform electrical bonding check (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.
3. Attach wires (11) to relay (2). Install six flat washers (15), identified terminal lugs (14), six lock washers (13), and nuts (12) to studs L1, L2, L3, T1, T2 and T3 (16).
4. Attach wires (5) to relay (2).
   - a. Pass wires (19), that attach to terminal studs A1, B2 and B3 (10) through center of shield (1).
   - b. Install seven flat washers (9), identified terminal lugs (8), lock washers (7), and nuts (6) on studs A1, A2, A3, B2, B3, X1 and X2 (10).







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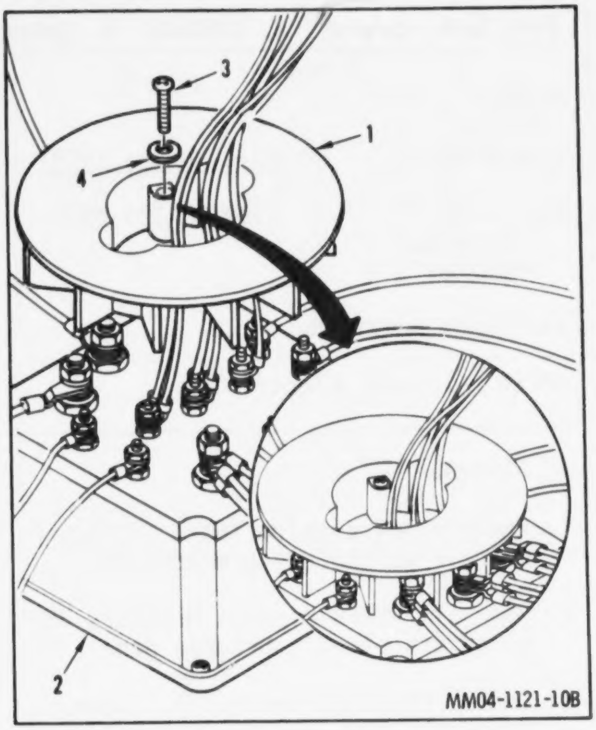
9-5-12. EXTERNAL POWER CONTACTOR RELAY REMOVAL/INSTALLATION (cont) 9-5-12

5. Install shield (1) on relay (2). Install two screws (3) and washers (4).
6. Inspect (TI).
7. Install power distribution box cover (para 2-3-44).
8. Perform external power and ground service utility receptacle operational check (TM 55-1520-238-T).



END OF TASK

9-5-13. EXTERNAL POWER CONNECTOR REMOVAL 9-5-13

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician

References:

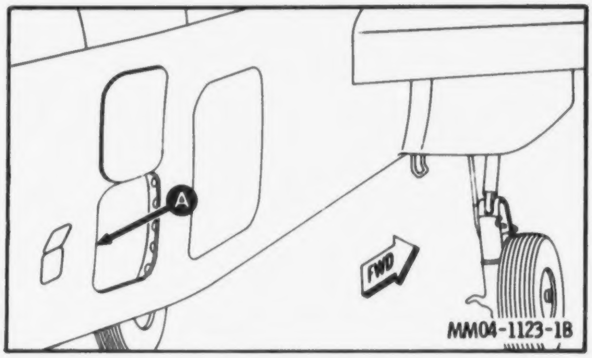
TM 55-1500-323-24

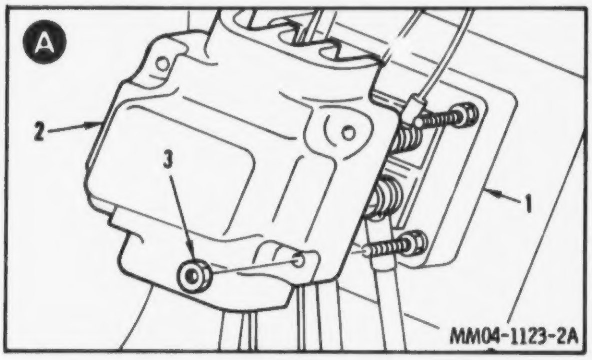
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors R345 and R330 opened

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.
2. Open six POWER circuit breakers on pilot aft circuit breaker panel.
3. Remove terminal cover (2). Remove four nuts (3).





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9-5-13. EXTERNAL POWER CONNECTOR REMOVAL (cont) 9-5-13

NOTE

Identify each wire and terminal during removal, for proper placement during installation.

4. **Detach wires (4) from connector J14 (1).**

   a. Identify wires (4).

   b. From two small terminals, remove two nuts (5), two lock washers (6), terminal lugs (7), and two flat washers (8).

   c. Remove four nuts (9), lock washers (10), terminal lugs (11), and flat washers (12) from four large terminals.

NOTE

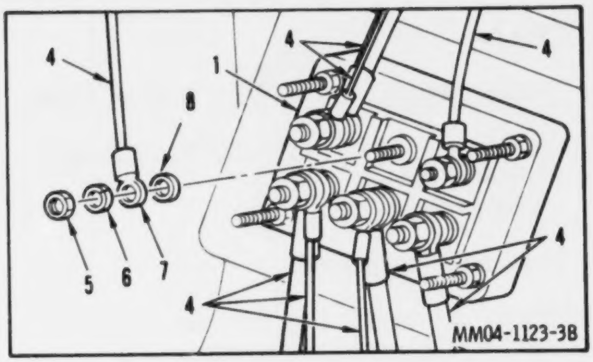
Access to back of connector J14 is through R33C access door.

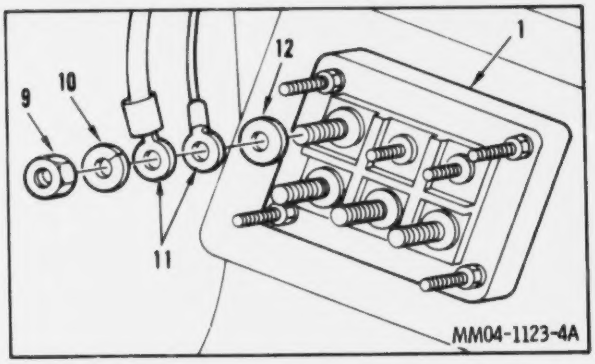
5. **Remove connector J14 (1).** Remove four nuts (13), washers (14), and screws (15).

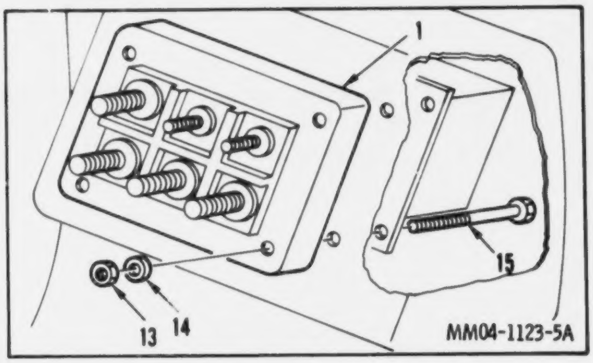
B. **CLEANING**

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. **INSPECTION**







1. **Check connector J14 mounting surface for cracks.** None allowed.

2. **Check for nicks and scratches.** Minor scratches are acceptable if there are no burrs or raised material penetrating the protective finish. No rework allowed.

3. **Check mounting area of connector J14 for stripped or damaged threads.** Thread damage not to exceed 50 percent of one thread.

4. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).

END OF TASK

9-5-14. EXTERNAL POWER CONNECTOR INSTALLATION 9-5-14

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

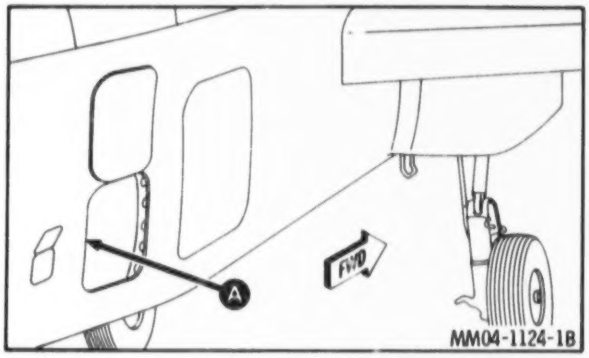
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

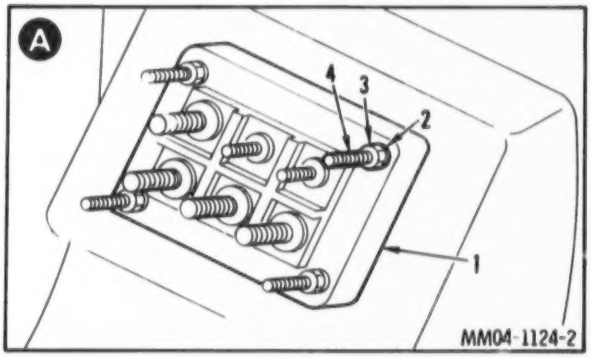
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors R345 and R330 opened



1. **Install external power connector J14 (1).** Install four washers (2), four nuts (3), and four screws (4).



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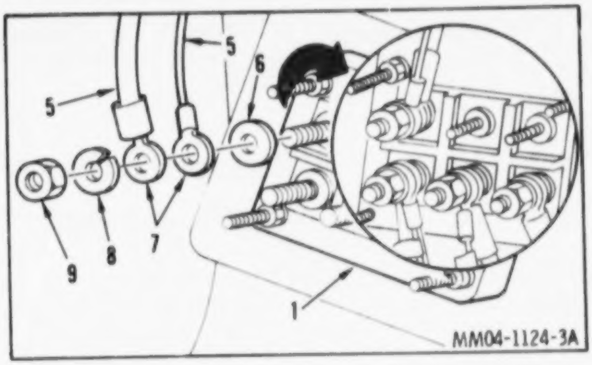
9-5-14. EXTERNAL POWER CONNECTOR INSTALLATION (cont) 9-5-14

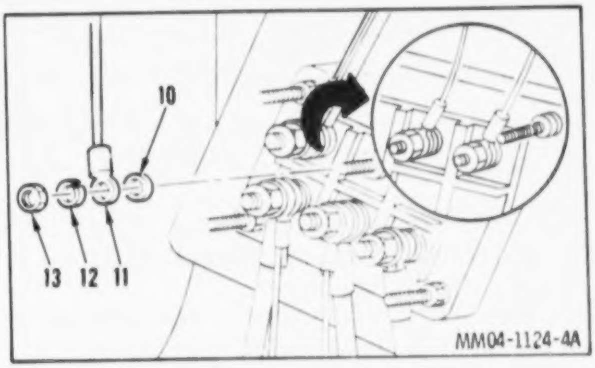
2. **Attach wires (5) to connector J14 (1).**

    a. Install four flat washers (6), identified terminal lugs (7), lock washers (8), and nuts (9) four large terminals.


5
5
6
9
8
7
1
MM04-1124-3A

    b. On two small terminals, install two flat washers (10), identified terminal lugs (11), two lock washers (12), and two nuts (13).

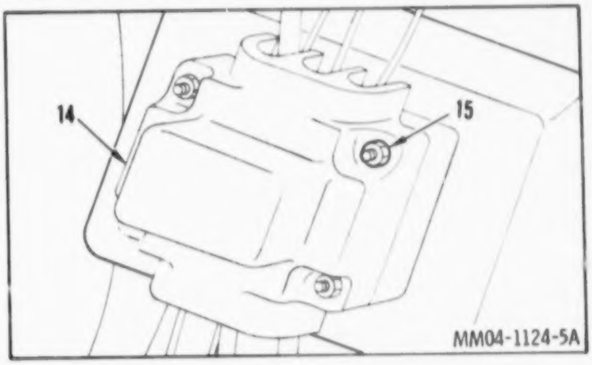
3. **Inspect (TI).**


10
13
12
11
MM04-1124-4A

4. **Install cover (14).** Install four nuts (15).

5. **Perform external power and ground service utility receptacle operational check** (TM 55-1520-238-T).

6. **Secure access doors R345 and R330** (para 2-2-2).


14
15
MM04-1124-5A

END OF TASK

9-5-15. GROUND SERVICE UTILITY CONNECTOR REMOVAL 9-5-15

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Soldering Iron, Electric	3439-00-853-8760

Personnel Required:

68F10 Aircraft Electrician

References:

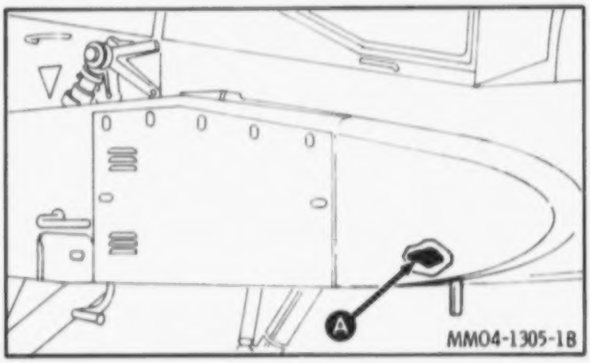
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access fairing R60 removed

A. REMOVAL

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**
2. **Open six POWER circuit breakers on pilot aft circuit breaker panel.**



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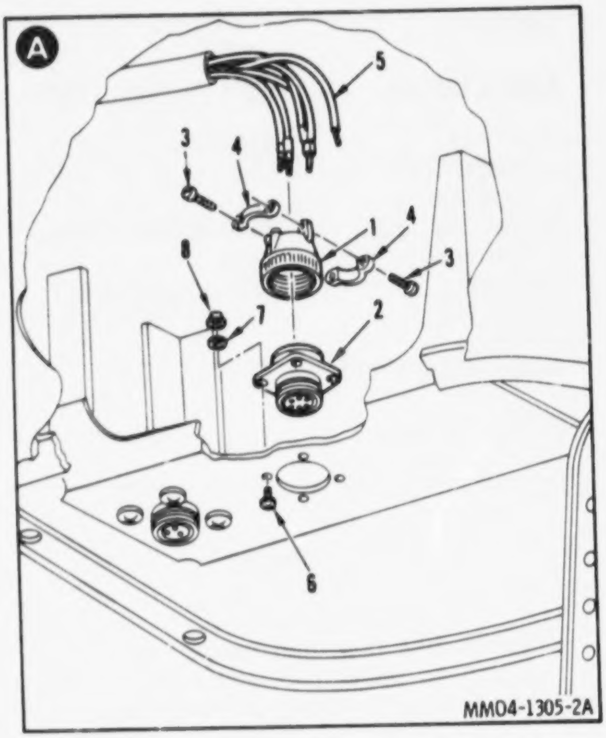
9-5-15. GROUND SERVICE UNILITY CONNECTOR REMOVAL (cont)



3. Remove backshell (1) from connector J16 (2).

a. Remove two screws (3) and retaining clamp (4).

b. Unscrew backshell (1).

c. Slide backshell (1) over wires (5).

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

NOTE

Identify each wire and terminal during removal, for proper placement during installation.

4. Detach wires (5) from connector J16 (2).

a. Identify wires (5).

b. Desolder wires (5). Use soldering iron (TM 55-1500-323-24).

5. Remove connector J16 (2). Remove screws (6), washers (7), and four nuts (8).

B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

Check wires for wear, cuts, breaks, and damaged connections (TM 55-1500-323-24).

END OF TASK

9-5-16. GROUND SERVICE UTILITY CONNECTOR INSTALLATION 9-5-16

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Soldering Iron, Electric	3439-00-853-8760
Ohmmeter, Digital	6625-01-125-3471

Materials/Parts:

(E50) Solder

Personnel Required:

68F10 Aircraft Electrician

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access fairing R60 removed

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

1. **Attach wires (1) to connector J16 (2).**

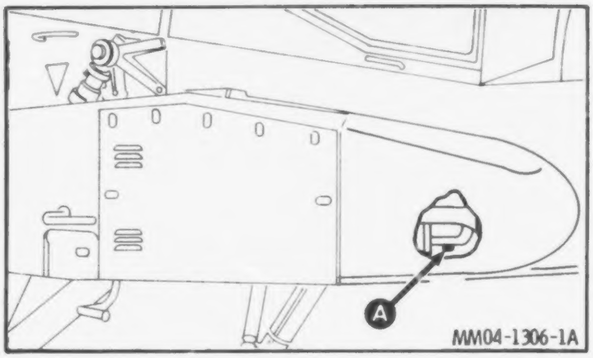
   a. Route wires (1) through backshell (3).

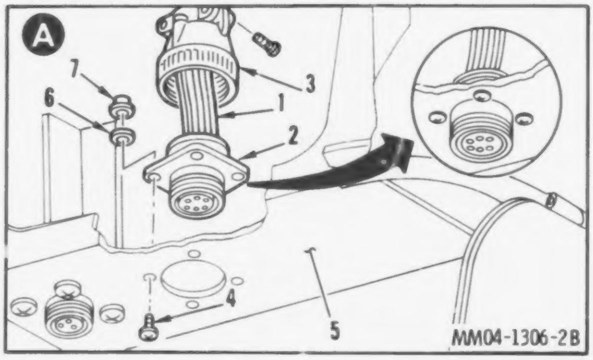
   b. Solder identified wires (1) in connector J16 (2). Use soldering iron and solder (E50) (TM 55-1500-323-24).

2. **Install connector J16 (2).** Install four screws (4) through structure (5), connector J16 (2), and four washers (5).

   a. Hold four screws (4).

   b. Install four nuts (7).





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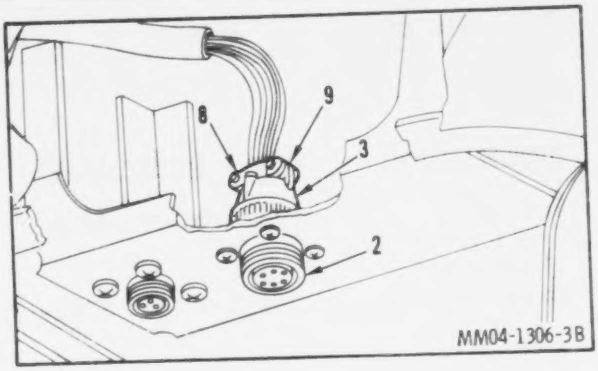
9-5-16. GROUND SERVICE UTILITY CONNECTOR INSTALLATION (cont)



3. **Attach backshell (2) on connector J16 (2).**

   a. Screw backshell (3) on connector (2).

   b. Install two screws (8) through retaining clamp (9) and backshell (3).

4. **Inspect (TI).**

5. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

6. **Perform external power and ground service utility receptacle** operational check (TM 55-1520-238-T).

7. Secure access doors R60 (para 2-2-2).

END OF TASK

9-5-17. EXTERNAL POWER ACCESS DOOR SWITCH REMOVAL 9-5-17

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Soldering Iron, Electric	3439-00-853-8760

Personnel Required:

68F10 Aircraft Electrician

References:

TM 55-1500-323-24

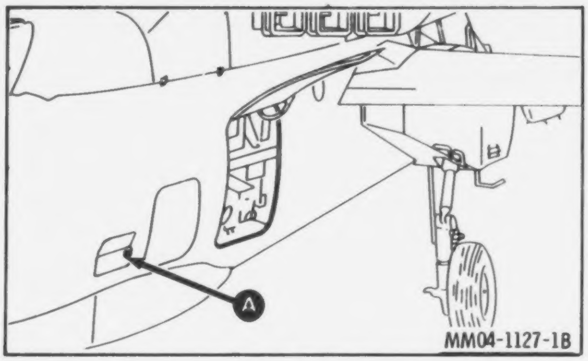
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors R345 open

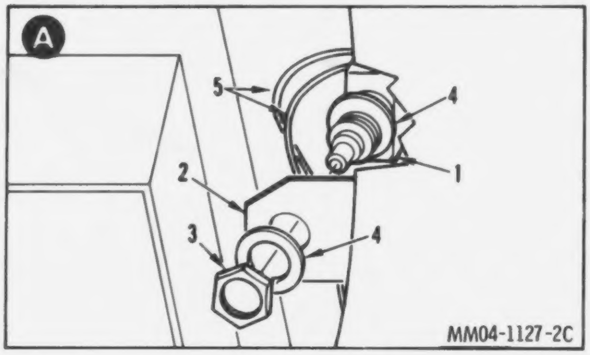
A. **REMOVAL**

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

2. **Open six POWER circuit breakers on pilot aft circuit breaker panel.**



3. **Remove microswitch S13 (1) from mounting bracket (2).** Remove nut (3) and two washers (4).



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WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

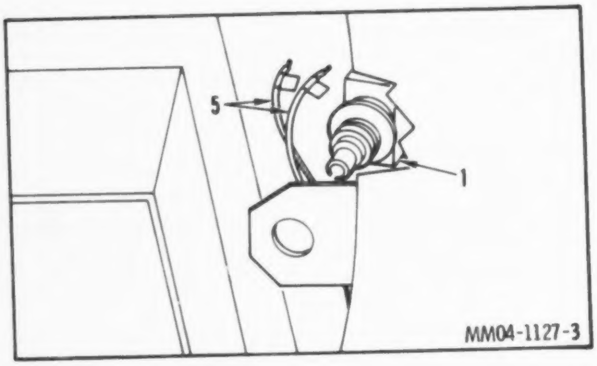
NOTE

Identify each wire and terminal during removal, for proper placement during installation.

4. **Detach wires (5) from microswitch (1).**

   a. Identify wires (5).

   b. Desolder wires (5). Use soldering iron (TM 55-1500-323-24).



B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

1. **Check wires for wear, cuts, and breaks (TM 55-1500-323-24).**

2. **Check access door R345 for damage (para 2-2-2).**

END OF TASK

9-5-18. EXTERNAL POWER ACCESS DOOR SWITCH INSTALLATION 9-5-18

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Soldering Iron, Electric	3439-00-853-8760

Materials/Parts:

(E50) Solder

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

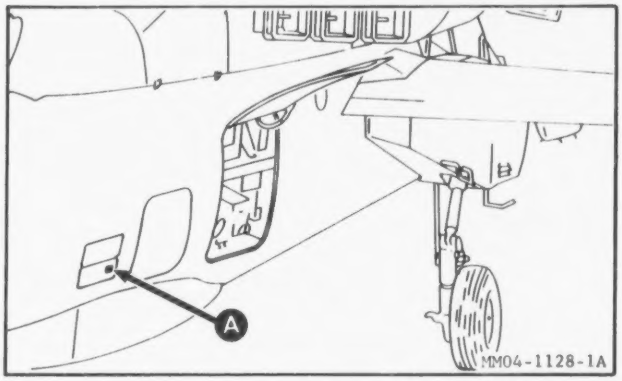
1. **Solder wires (1) to switch (2).** Solder identified wires (1). Use soldering iron and solder (E50) (TM 55-1500-323-24).

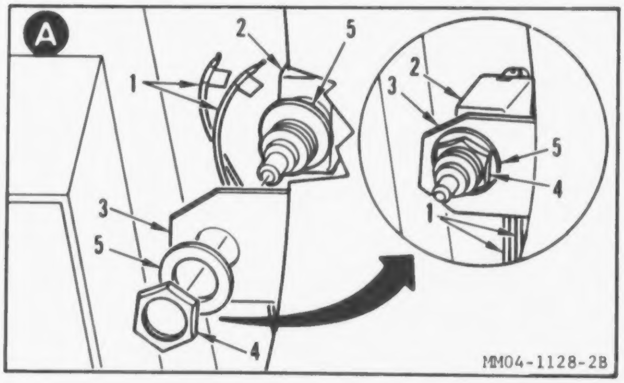
2. **Install switch (2) on mounting bracket (3).** Install switch (1) through washer (5), bracket (3), and washer (5). Install nut (4).

3. **Inspect (TI).**

4. **Perform external power and ground service utility connector operational check** (TM 55-1520-238-T).

5. **Secure access door R345** (para 2-2-2).





END OF TASK

9-5-19. PILOT EXT PWR/RESET SWITCH REPLACEMENT 9-5-19

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician

References:

TM 55-1500-323-24
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
9-8-16	Pilot ELEC PWR edge lighted panel removed
9-5-24	Pilot ELEC PWR panel removed

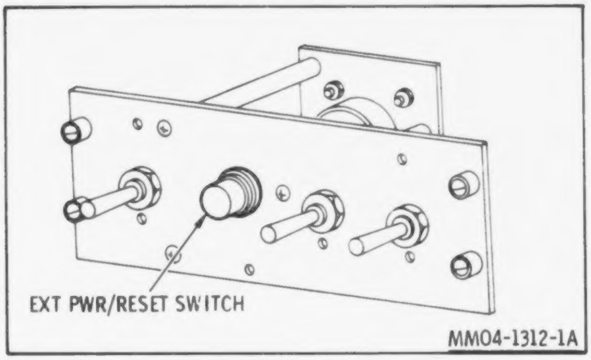
A. REMOVAL

1. **Position connector (1) for access to switch S3 (2).** Remove three screws (3) and three lock washers (4).

NOTE

Identify each wire and terminal during removal, for proper placement during installation.

2. **Detach wires (5) from switch S3 (2).**
   a. Identify wires (5).
   b. Remove two screws (6), lock washers (7), and terminal lugs (8).



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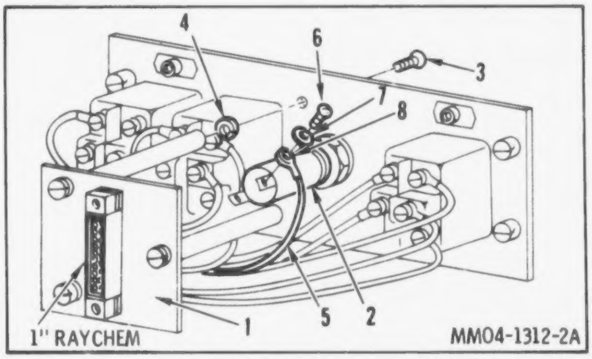

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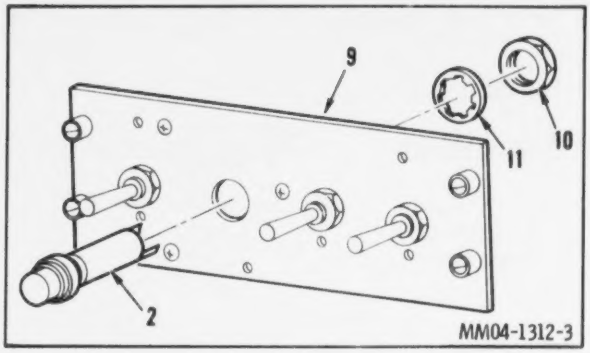
9-5-19. PILOT EXT PWR/RESET SWITCH REPLACEMENT (cont) 9-5-19

3. **Remove switch S3 (2) from ELEC PWR panel (9).** Remove nut (10) and lock washer (11).



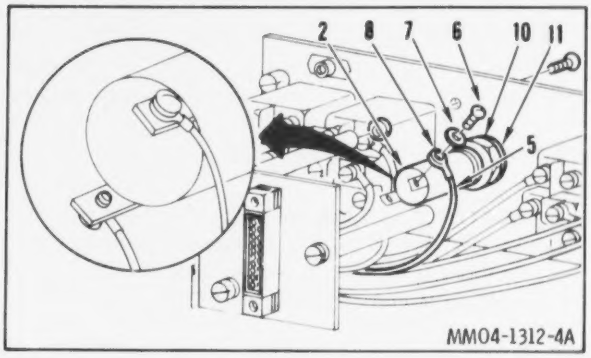
B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

Check wires for wear, cuts, breaks, and damaged terminal lugs (TM 55-1500-323-24).

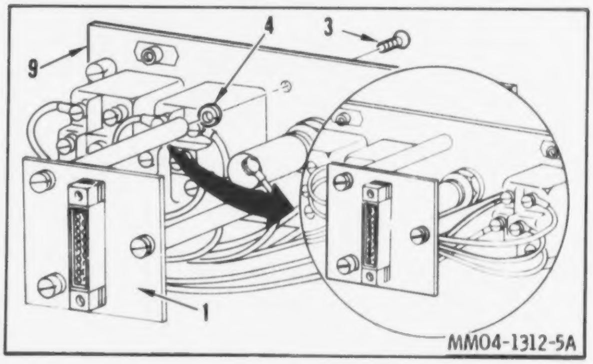
D. INSTALLATION



1. **Attach switch S3 (2) to panel (9).** Install lock washer (11) and nut (10).

2. **Attach wires (5) to switch S3 (2).** Install two terminal lugs (8), lock washers (7), and screws (6).

3. **Attach connector (1) to panel (9).** Install three lock washers (4) and screws (3).



4. **Inspect (TI).**

5. **Install ELEC PWR panel (para 9-5-25).**

6. **Install pilot ELEC PWR edge lighted panel** (para 9-8-16).

7. **Perform external power and ground service utility receptacle operational check** (TM 55-1520-238-T).

END OF TASK

9-5-20. PILOT GEN 1, GEN 2, OR BATT/EXT PWR SWITCHES REPLACEMENT 9-5-20

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1500-323-24
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
9-8-16	Pilot ELEC PWR edge lighted panel removed
9-5-24	Pilot ELEC PWR panel removed

NOTE

This task is typical for switches S1, S2, and S4.

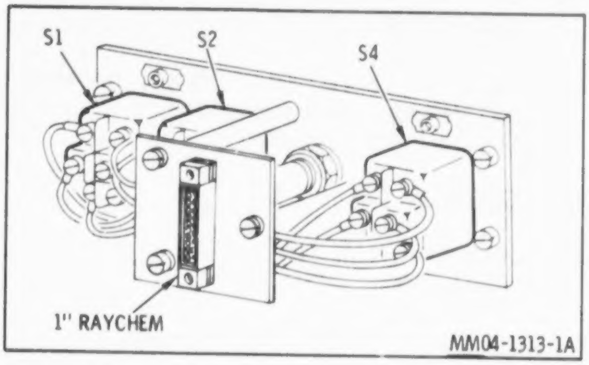
A. **REMOVAL**

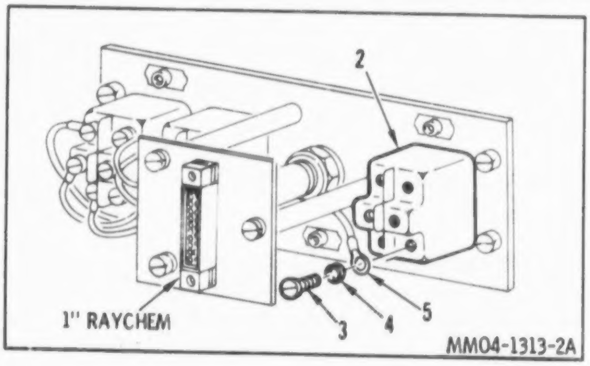
1. **Identify switch S1, S2, or S4 to be replaced.**

NOTE

Identify each wire and terminal during removal, for proper placement during installation.

2. **Detach wires (1) from switch (2).**
   a. Identify wires (1).
   b. Remove screws (3), lock washers (4), and terminal lugs (5).





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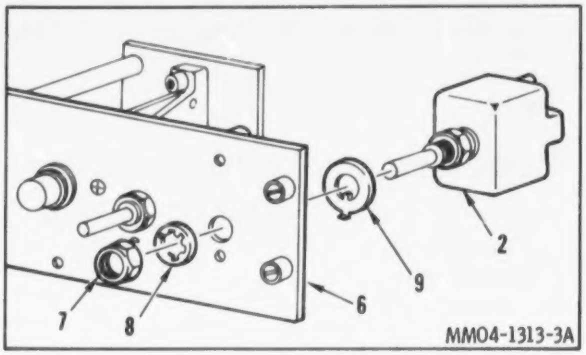
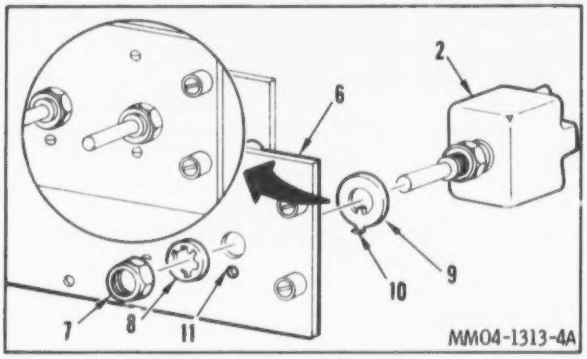
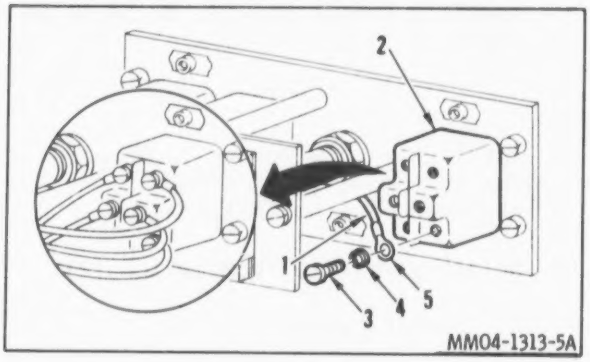
9-5-20. PILOT GEN 1, GEN 2, OR BATT/EXT PWR SWITCHES REPLACEMENT (cont) 9-5-20







3. **Detach switch (2) from ELEC PWR panel (6).**
   - a. Remove nut (7) and lock washer (8) from switch (2).
   - b. Remove switch (2) and lockring (9) from panel (6).
   - c. Remove lockring (9) from switch (2).

B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

Check wires for wear, cuts, breaks, and damaged terminal lugs (TM 55-1500-323-24).

D. INSTALLATION

1. **Attach switch (2) to panel (6).**
   - a. Insert switch (2) through lockring (9).
   - b. Insert switch (2) in panel (6) so tab (10) on lockring (9) seats in locator hole (11).
   - c. Install lock washer (8) and nut (7).
2. **Attach wires (1) to switch (2).** Install screws (3) through lock washers (4) and lugs (5) into switch (2).

GO TO NEXT PAGE

9-5-20. PILOT GEN 1, GEN 2, OR BATT/EXT PWR SWITCHES REPLACEMENT (cont) 9-5-20

3. Inspect (TI).

4. Install pilot ELEC PWR panel (para 9-5-25).

5. Install pilot ELEC PWR edge lighted panel (para 9-8-16).

6. If GEN 1 or GEN 2 switches were replaced, perform AC electrical power generation operational check, if BATT/EXT PWR switch was replaced, perform DC electrical power generation operational check (TM 55-1520-238-T).

END OF TASK

9-5-21. BATTERY RELAY REMOVAL/INSTALLATION 9-5-21

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

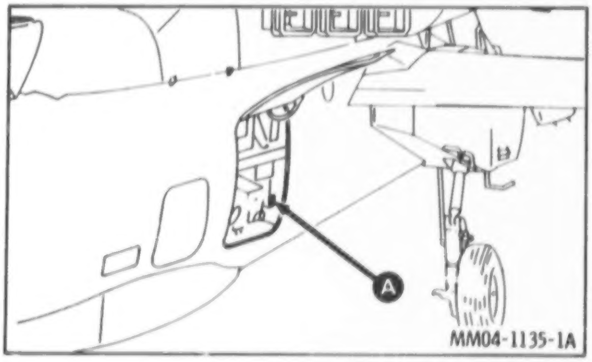
Equipment Conditions:

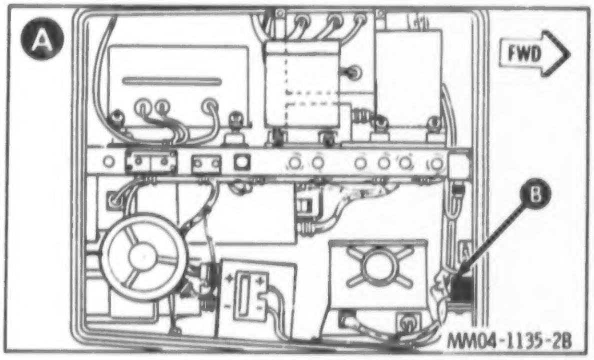
Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors R295 opened

A. REMOVAL

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

2. **Open six POWER circuit breakers on pilot aft circuit breaker panel.**





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9-5-21. BATTERY RELAY REMOVAL/INSTALLATION (cont) 9-5-21

NOTE

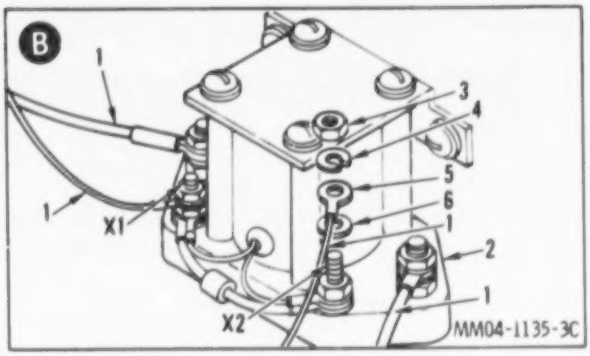
Identify each wire and terminal during removal, for proper placement during installation.

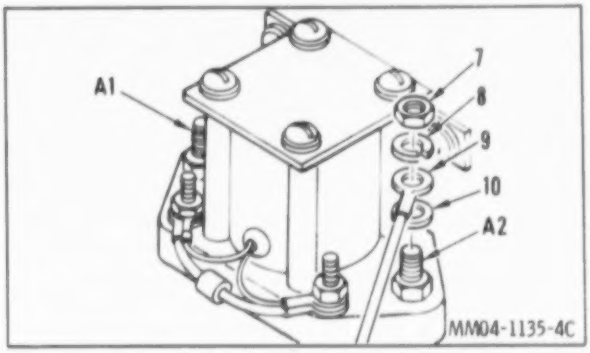
3. **Detach wires (1) from battery relay (2).**

   a. Identify wires (1) attached to relay (2).

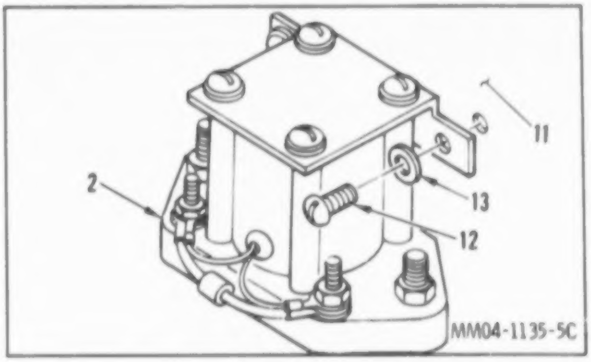
   b. Remove two nuts (3), lock washers (4), terminal lugs (5), and flat washers (6) from two studs X1 and X2.

   c. Remove two nuts (7), lock washers (8), terminal lugs (9), and flat washers (10) from two studs A1 and A2.





4. **Remove battery relay (2) from aft avionics bay bulkhead (11).** Remove two screws (12) and washers (13).



B. **CLEANING**

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. **INSPECTION**

Check wires for wear, cuts, breaks, and damaged terminal lugs (TM 55-1500-323-24).

GO TO NEXT PAGE

9-5-21. BATTERY RELAY REMOVAL/INSTALLATION (cont) 9-5-21

D. INSTALLATION

1. **Install relay (2) on bay bulkhead (11).** Install two washers (13) and screws (12).

2. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. **Attach wires (1) to relay (2).**

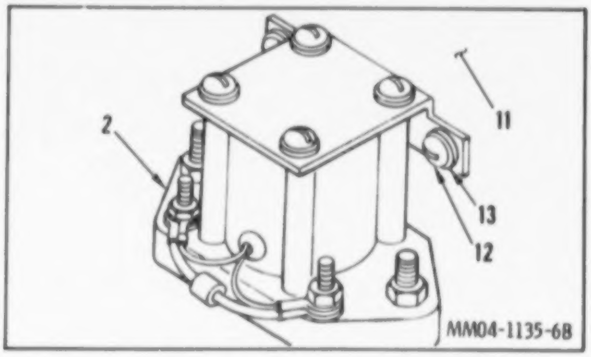
   a. Install two flat washers (10), terminal lugs (9), lock washers (8), and nuts (7) on terminal studs A1 and A2.

   b. Install two flat washers (6), identified terminal lugs (5), lock washers (4), and nuts (3) on terminal studs X1 and X2.

4. **Inspect (TI).**

5. **Perform battery operational check** (TM 55-1520-238-T).

6. **Secure access door R295** (para 2-2-2).



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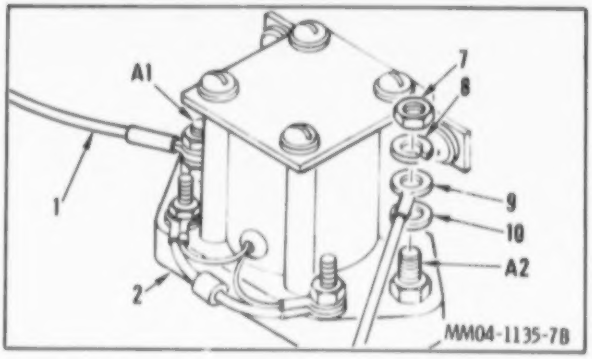

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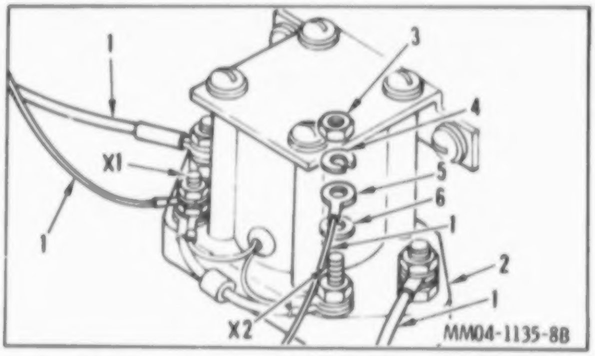

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END OF TASK

9-5-22. HELICOPTER BATTERY REMOVAL 9-5-22

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician

References:

TM 11-6140-203-14-2
TM 55-1500-323-24

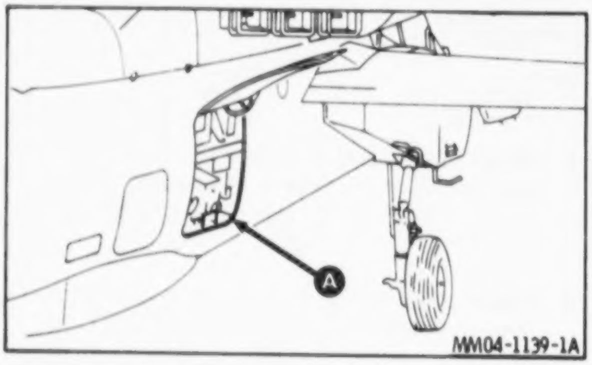
Equipment Conditions:

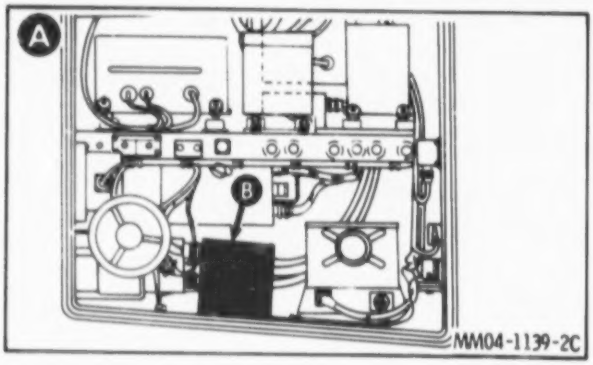
Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors R295 opened

A. **REMOVAL**

1. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**

2. **Open six POWER circuit breakers on pilot aft circuit breaker panel.**





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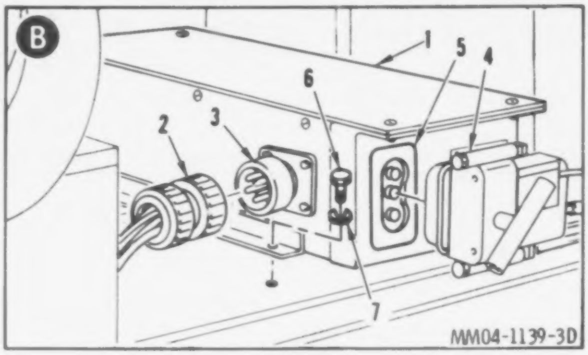


3. **Detach two connectors from battery (BT1) (1).**

   a. Detach connector P81 (2) from battery connector BT1J2 (3).

   b. Detach connector P87 (4) from battery connector BT1J3 (5).

4. **Remove battery (1).** Remove four bolts (6) and washers (7).

B. **CLEANING**

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. **INSPECTION**

1. **Check mounting surface nutplates for stripped or damaged threads.** Damage not to exceed 50 percent of one thread.

2. **Check connector for bent pins or damaged threads** (TM 55-1500-323-24). Thread damage not to exceed 50 percent of one thread.

3. **Check mounting surface, nutplates, and connectors for corrosion** (para 1-5-38).

4. **Inspect battery** (TM 11-6140-203-14-2).

END OF TASK

9-5-23. HELICOPTER BATTERY INSTALLATION 9-5-23

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1500-238-T

Equipment Conditions:

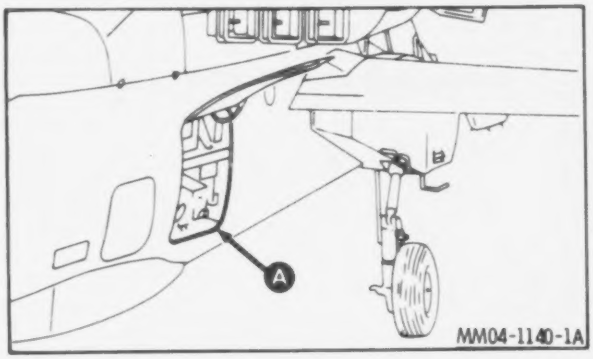
Ref	Condition
1-7-2	Helicopter safed

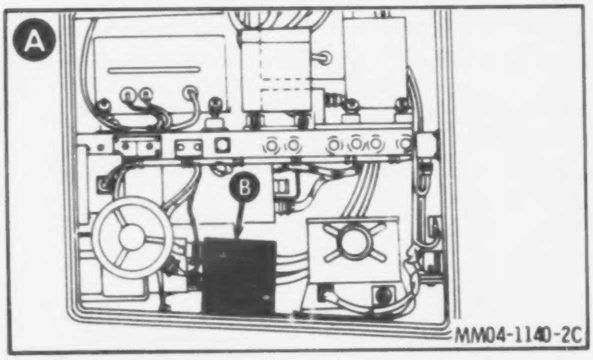
WARNING

When battery is connected and APU start switch is placed to START, APU will start and run with battery switch in off position. If APU were to start, death or serious injury could result. If injury occurs, seek medical aid.

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open six POWER circuit breakers on pilot aft circuit breaker panel.





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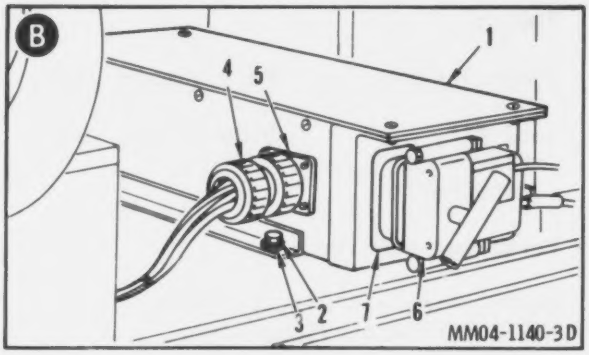
9-5-23. HELICOPTER BATTERY INSTALLATION (cont) 9-5-23



3. **Install battery (BT1) (1).** Install four washers (3) and bolts (2).

4. **Attach two connectors to battery (1).**

   a. Attach connector P81 (4) to battery connector BT1J2 (5).

   b. Attach connector P87 (6) to battery connector BT1J3 (7).

5. **Inspect (TI).**

6. **Perform battery operational check** (TM 55-1520-238-T).

7. **Secure access door R295** (para 2-2-2).

END OF TASK

9-5-24. PILOT ELEC PWR PANEL REMOVAL

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. **REMOVAL**

1. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**

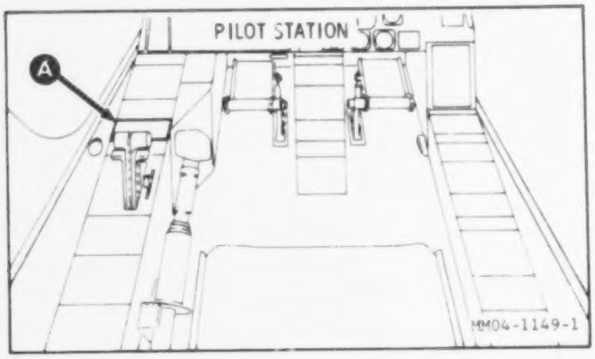
2. **Open six POWER circuit breakers on pilot aft circuit breaker panel.**

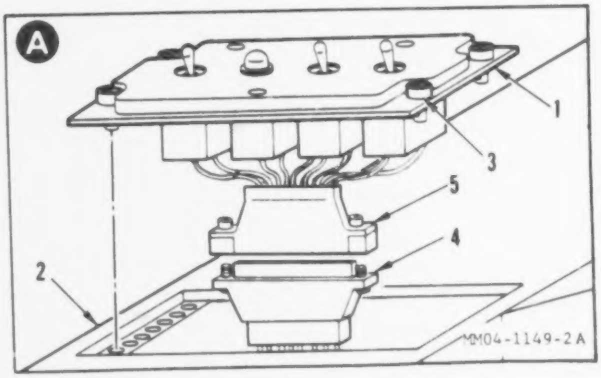
NOTE

If unable to lift panel clear of console, remove **STORES JETT** and **EMERG PWR OVSP TEST** panels to gain access to connector P172.

3. **Remove pilot ELEC PWR panel (1) from pilot left console (2).** Unlock four Camloc fasteners (3).

4. **Detach connector from panel (1).** Detach connector P172 (4) from connector A125J1 (5).





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B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

1. **Check mounting surface for stripped or damaged threads.** Damage not to exceed 50 percent of one thread.
2. Check connector for bent pins or damaged threads (TM 55-1500-323-24).

END OF TASK

9-5-25. PILOT ELEC PWR PANEL INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1500-238-T
TM 55-1520-323-24

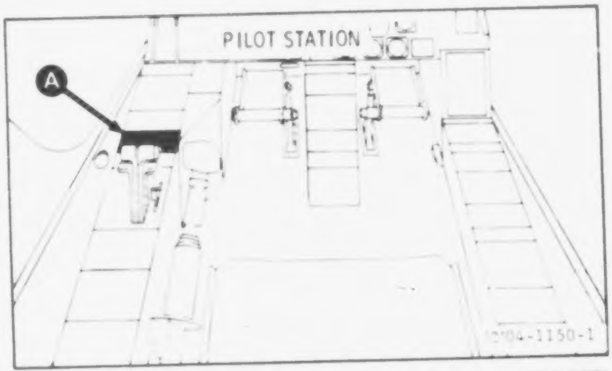
Equipment Conditions:

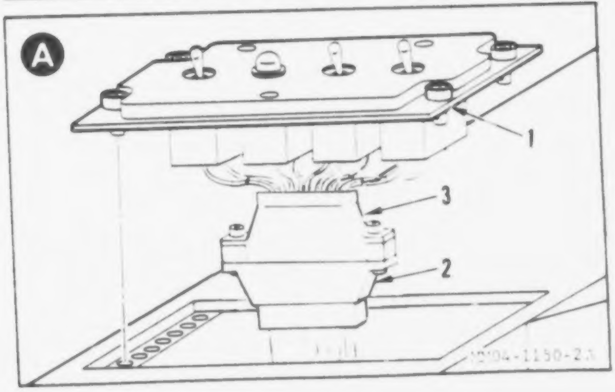
Ref	Condition
1-7-2	Helicopter safed

---

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Attach connector to pilot ELEC PWR panel (1). Attach connector P172 (2) to connector A125J1 (3).





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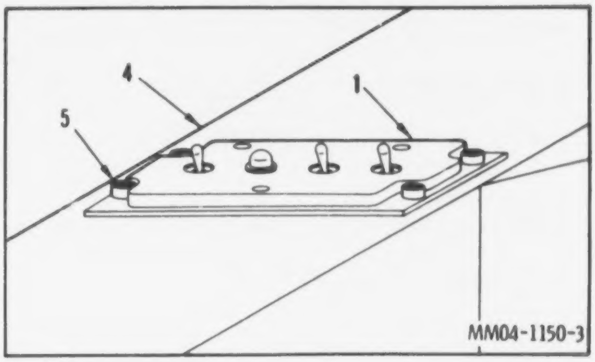
9-5-25. PILOT ELEC PWR PANEL INSTALLATION (cont) 9-5-25

3. **Install panel (1) in pilot left console (4).** Lock four Camloc fasteners (5).

4. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

5. **Inspect (TI).**

6. **Perform external power and ground service utility receptacle operational check** (TM 55-1520-238-T).



END OF TASK

9-5-26. GENERATOR CONTROL CIRCUIT CARD REMOVAL (AVIM) 9-5-26

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electronic Equipment TK-101	5180-00-064-5178

Personnel Required:

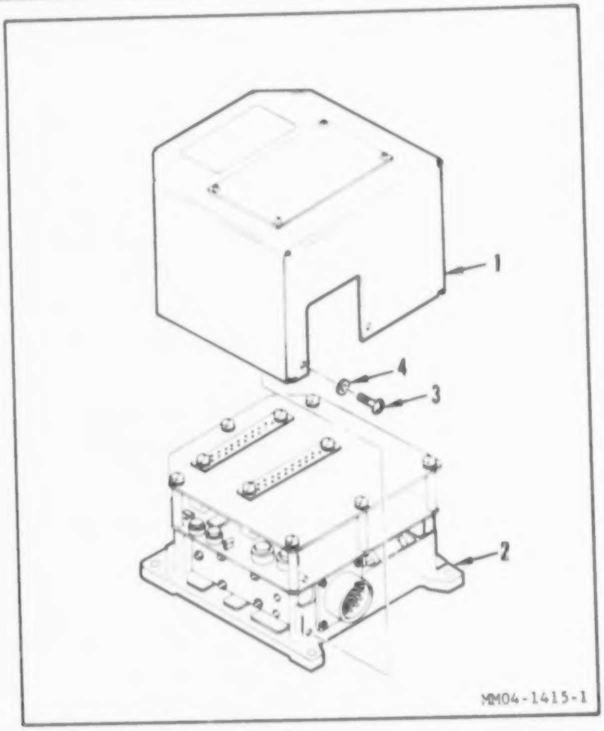
35B10 Electronic Instrument Repairer

References:

TM 55-1500-323-24

A. REMOVAL

1. **Remove cover (1) from generator control unit (2).** Remove three screws (3) and lock washers (4).



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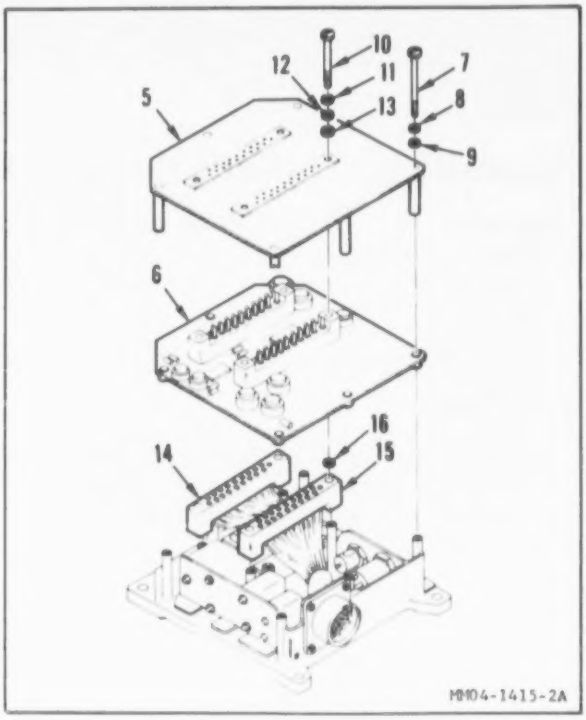
9-5-26. GENERATOR CONTROL CIRCUIT CARD REMOVAL (AVIM) (cont) 9-5-26



3. **Remove circuit cards A1 (5) and A2 (6).**

   a. Remove six screws (7), lock washers (8), and flat washers (9).

   b. Remove four screws (10), lock washers (11), flat washers (12), and insulators (13).

   c. Detach circuit card A1 (5) from circuit card A2 (6).

   d. Detach circuit card A2 (6) from J2 (14) and J3 (15).

   e. Remove four insulators (16).

B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

1. **Check mounting area for stripped threads.** Damage not to exceed 50 percent of one thread.

2. **Check connectors for bent pins or damage** (TM 55-1500-323-24).

END OF TASK

9-5-27. GENERATOR CONTROL CIRCUIT CARD INSTALLATION (AVIM) 9-5-27

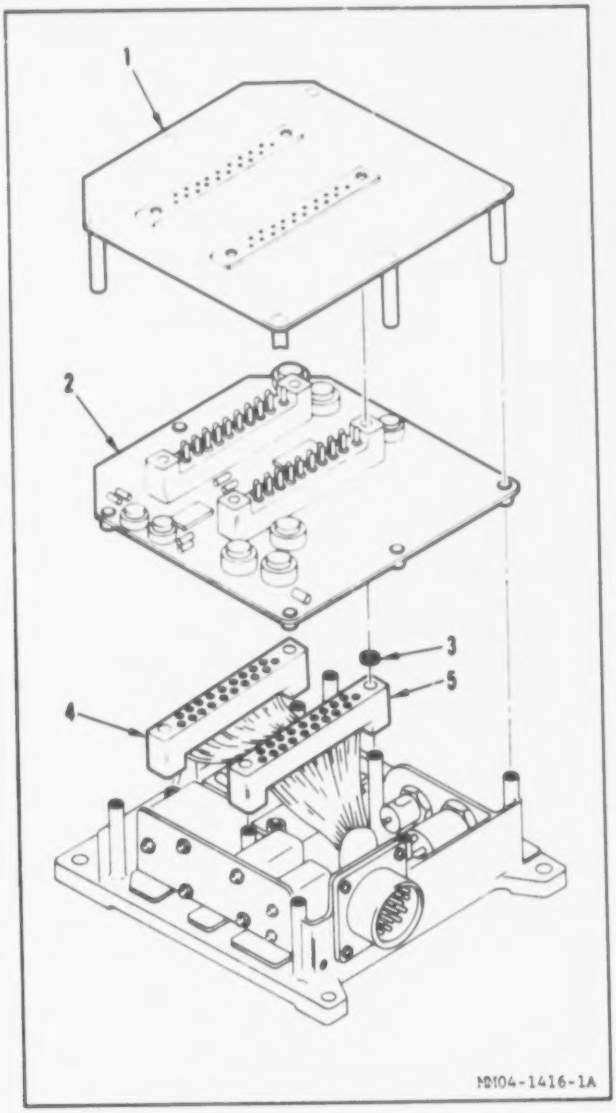
Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electronic Equipment TK-101	5180-00-064-5178

Personnel Required:

35B10	Electronic Instrument Repairer
66R30	Inspector/Supervisor

1. **Install circuit cards A1 (1) and A2 (2).**
   a. Position four insulators (3) on two receptacles J2 (4) and J3 (5).
   b. Attach circuit card A2 (2) to receptacles J2 (4) and J3 (5).
   c. Attach circuit card A1 (1) to circuit card A2 (2).



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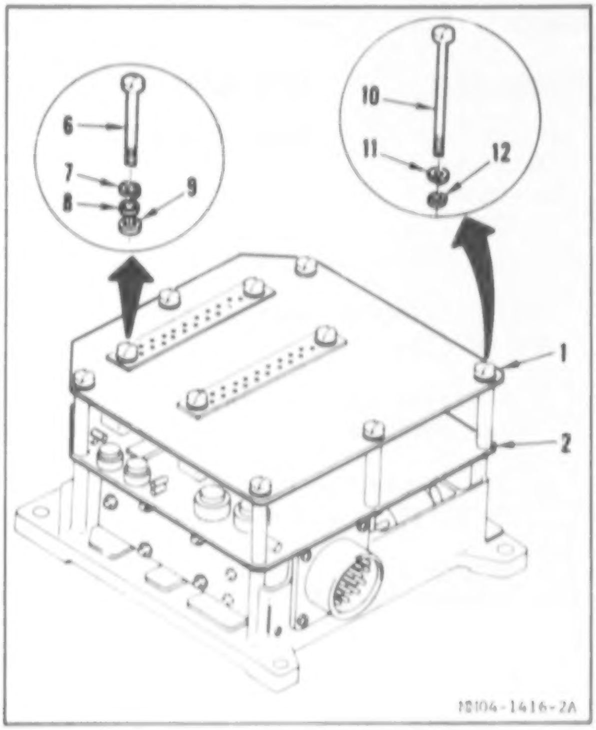
9-5-27. GENERATOR CONTROL CIRCUIT CARD INSTALLATION (AVIM) (cont) 9-5-27

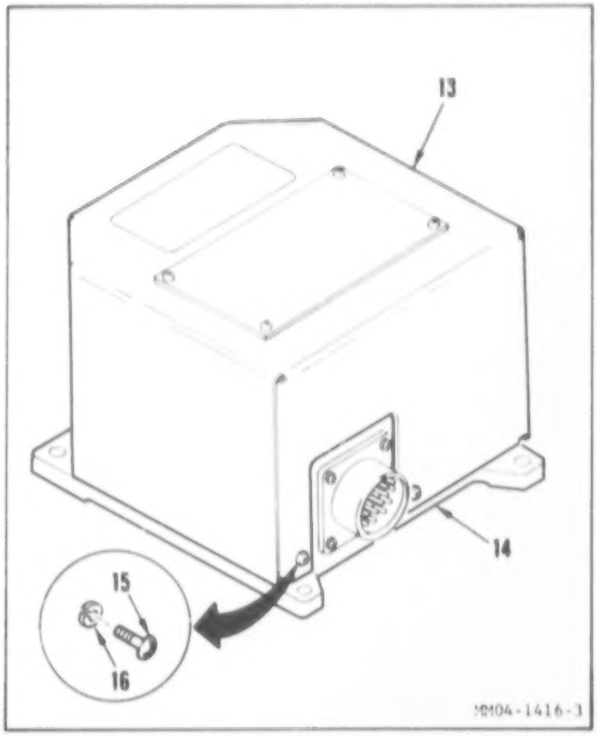
d. Install four screws (6) through lock washers (7), flat washers (8), and insulators (9) into circuit card (1).

e. Install six screws (10) through lock washers (11), flat washers (12), circuit card (1), and circuit card (2) into generator unit (14).



2. Inspect (TI).

3. Install cover (13) on generator unit (14). Install three screws (15) through three lock washers (16) and into cover (13).



END OF TASK

9-5-28. BUS ISOLATION DIODE REMOVAL/INSTALLATION 9-5-28

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Crowfoot Attachment 9/16, 1/4 Drive	5120-00-541-4074
Wrench, Torque, 1/4 Drive	5120-00-542-4489

Materials/Parts:

(E111) Compound, Silicone

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1500-323-24
TM 55-1520-238-T

Equipment Conditions:

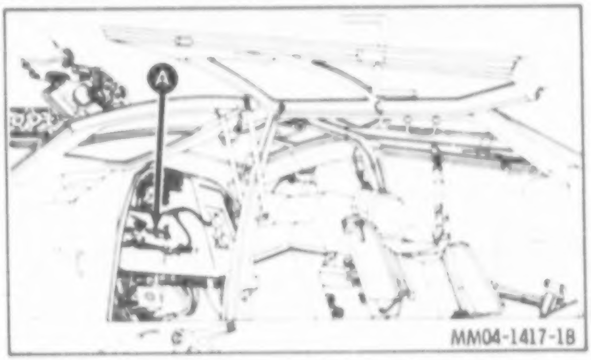
Ref	Condition
1-7-2	Helicopter safed
2-3-44	Electrical power distribution box cover removed

NOTE

This task is typical for bus isolation diodes CR1, CR2, CR3, and CR4.

A. **REMOVAL**

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**
2. **Open six POWER circuit breakers on pilot aft circuit breaker panel.**
3. **Remove bus isolation diode (1) or (2) from bus conductor (3).**
   a. Remove nut (4), washer (5), and flat washer (6).
   b. Remove diode (1) or (2) from bus conductor (3).



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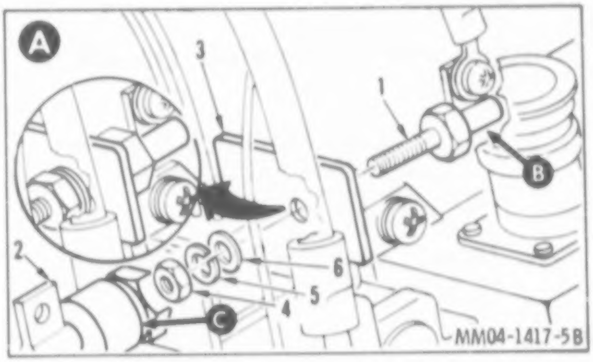

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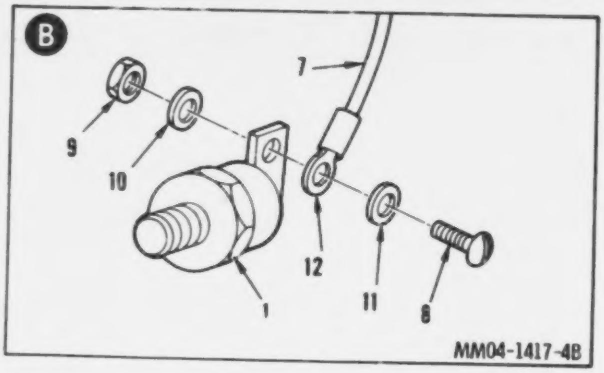
9-5-28. BUS ISOLATION DIODE REMOVAL/INSTALLATION (cont) 9-5-28

4. Detach wire (7) from diode (1) (CR1 and CR2).

   a. Hold screw (8).

   b. Remove nut (9) and washer (10) from screw (8).

   c. Remove screw (8), washer (11), and terminal (12) from diode (1).

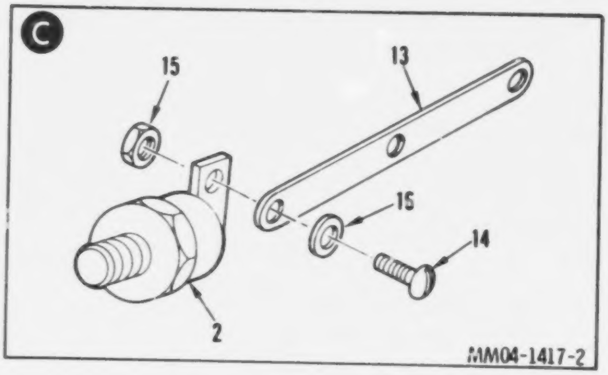


5. Detach bus bar W3 (13) from diode (2) (CR3 and CR4).

   a. Hold screw (14).

   b. Remove nut (15) from screw (14).

   c. Remove screw (14), washer (16), and bus bar (13) from diode (2).



B. CLEANING

1. Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

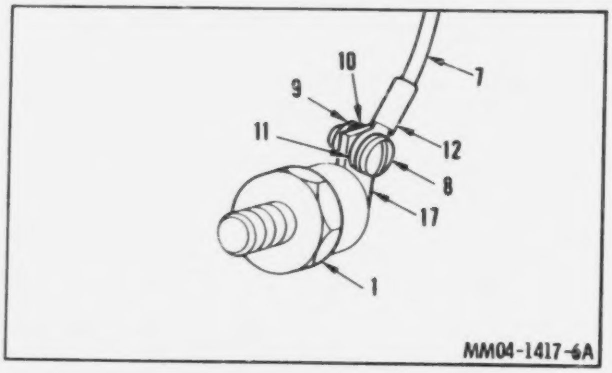
2. Check wires for wear, cuts, breaks, and damaged terminal lugs (TM 55-1500-323-24).

D. INSTALLATION

1. Attach wire (7) to diode (1) (CR1 and CR2).

   a. Insert screw (8) through washer (11), terminal (12), diode terminal (17).

   b. Install washer (10) and nut (9) on screw (8).



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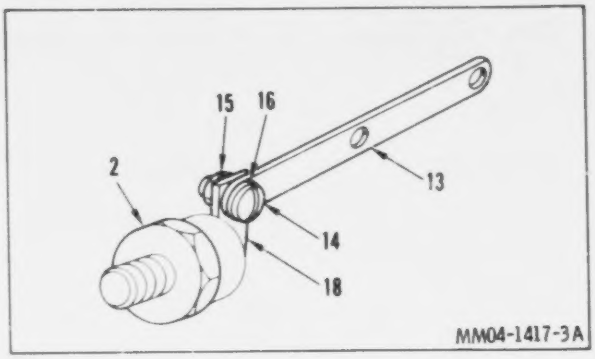
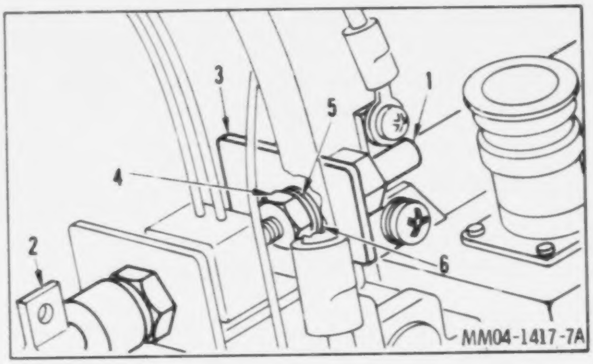
9-5-28. BUS ISOLATION DIODE REMOVAL/INSTALLATION (cont) 9-5-28





2. **Attach bus bar W3 (13) to diode (2) (CR3 and CR4).**
   a. Insert screw (14) through washer (16), bus bar (13) and diode (18).
   b. Install nut (15) on screw (14).
3. **Apply a thin coat of silicone compound to diode mounting surface.** Use compound (E111).
4. **Install diode (1) or (2) on conductor (3).**
   a. Position diode (1) or (2) on bus conductor (3).
   b. Install flat washer (6), lock washer (2), and nut (4).
5. **Torque nut (4) to 120 INCH-POUNDS.** Use 9/16, 1/4 drive crowfoot.

NOTE

Wait 20 to 30 minutes.

6. **Retorque nut (4) to 120 INCH-POUNDS.**
7. **Inspect (TI).**
8. **Install power distribution box cover (para 2-3-44).**
9. **Perform DC power generation operational check (TM 55-1520-238-T).**

END OF TASK

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9-5-29. DC BUS TIE CONTACTOR REMOVAL/INSTALLATION 9-5-29

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

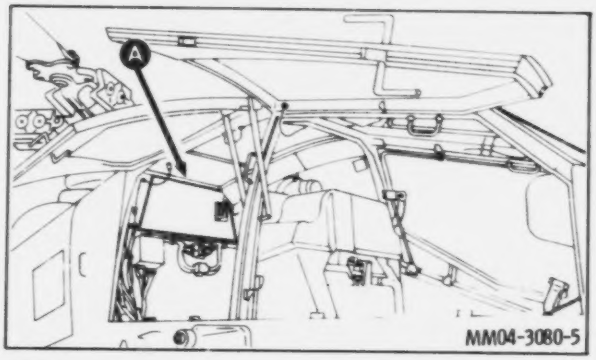
Equipment Conditions:

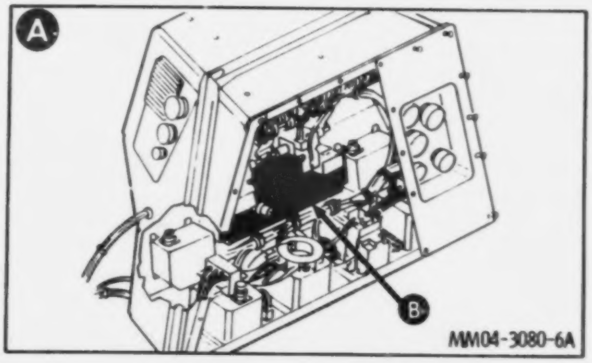
Ref	Condition
1-7-2	Helicopter safed
2-3-44	Electrical power distribution box cover removed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open six POWER circuit breakers on pilot aft circuit breaker panel.





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9-5-29. DC BUS TIE CONTACTOR REMOVAL/INSTALLATION (cont) 9-5-29

3. **Detach connector P14 (1) from connector J1 (2).**

4. **Remove two terminal shields (3).** Remove two screws (4), washers (5), and shields (3).

5. **Remove two bus conductors (6).**

   a. Remove two nuts (7) and washers (8).

   NOTE

   Identify each wire and terminal during removal for proper placement during installation.

   b. Identify and detach wires (9) from studs (10).

   c. Remove conductor (6) from studs (10).

6. **Detach wires (11) from studs (12).**

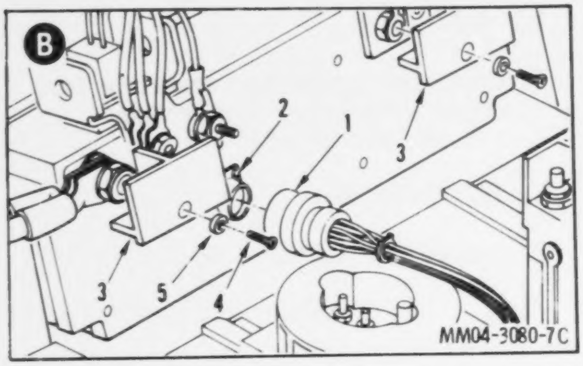
   a. Remove two nuts (13) and washers (14) from studs (12).

   b. Identify and detach wires (11) from studs (12).

7. **Remove DC bus tie contactor (15).**

   a. Remove four screws (16) and washers (17).

   b. Remove contactor (15).


B
2
1
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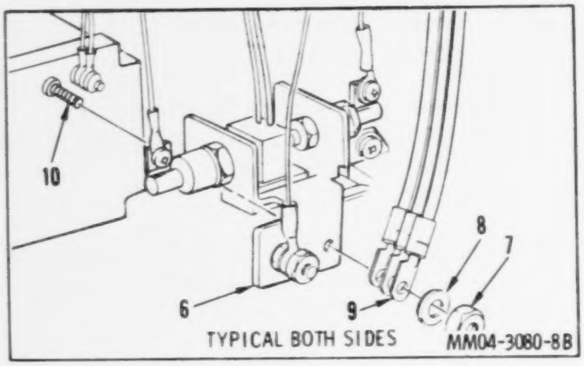
MM04-3080-7C


10
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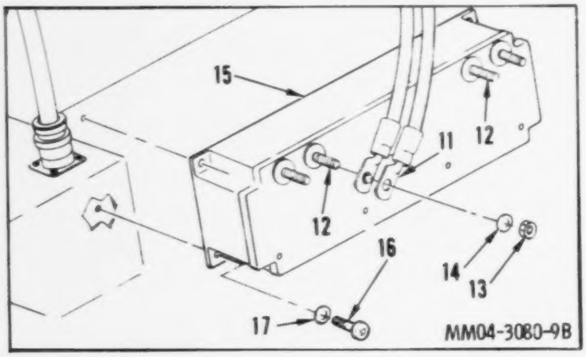
TYPICAL BOTH SIDES
MM04-3080-8B


15
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MM04-3080-9B

B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

GO TO NEXT PAGE

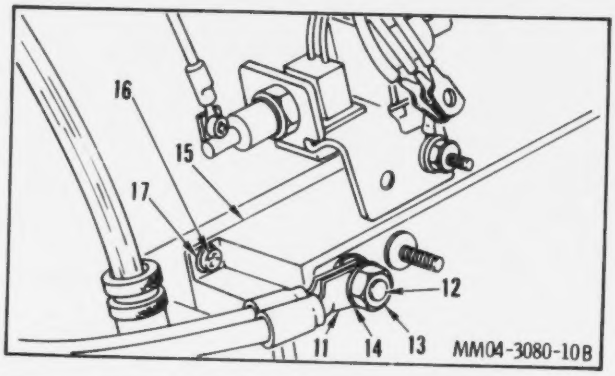
9-5-29. DC BUS TIE CONTACTOR REMOVAL/INSTALLATION (cont) 9-5-29

C. INSPECTION

1. Check bus conductor assembly for loose or damaged connections (TM 55-1500-323-24).

D. INSTALLATION

1. **Install contactor (15).**
    a. Aline contactor (15) with mounting holes.
    b. Install four washers (17) and screws (16).
2. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.
3. **Attach wires (11) to two studs (12).** Install wires (11), washers (14), and nuts (13) on studs (12).
4. **Install two conductors (6).**
    a. Install two conductors (6) on studs (10).
    b. Attach wires (9) with washer (8) and nut (7).
5. **Install two shields (3).** Install screw (4) through washer (5) into shield (3).
6. **Attach connector P14 (1) to connector J1 (2).**
7. **Inspect (TI).**



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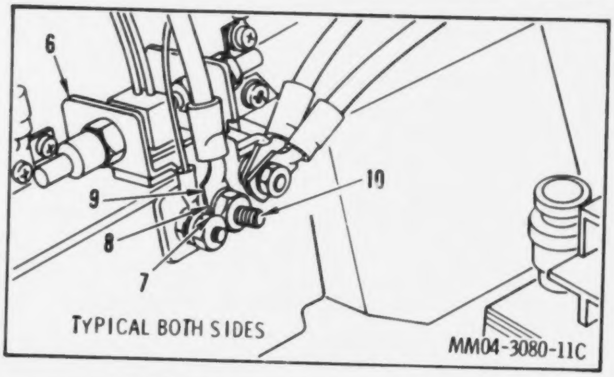
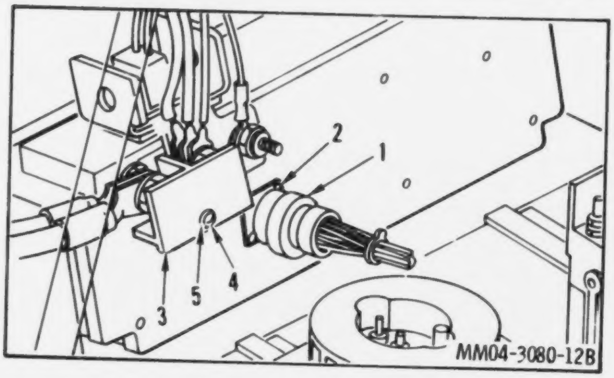


MM04-3080-11C



MM04-3080-12B

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8. Install electrical power distribution box cover (para 2-3-44).

9. Perform DC electrical power generation operational check (TM 55-1520-238-T).

END OF TASK

9-5-30. TERMINAL JUNCTION BOX REPLACEMENT 9-5-30

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Materials/Parts:

(E111) Compound, Silicone

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

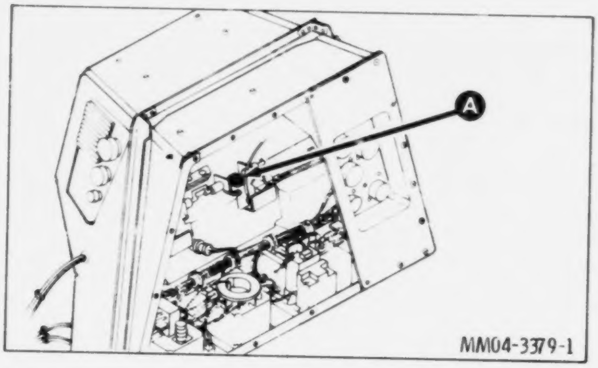
TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-44	Electrical power distribution box cover removed
9-5-29	Bus conductor removed

NOTE

This task is typical for left (TB1-3) or right (TB1-2) junction boxes.



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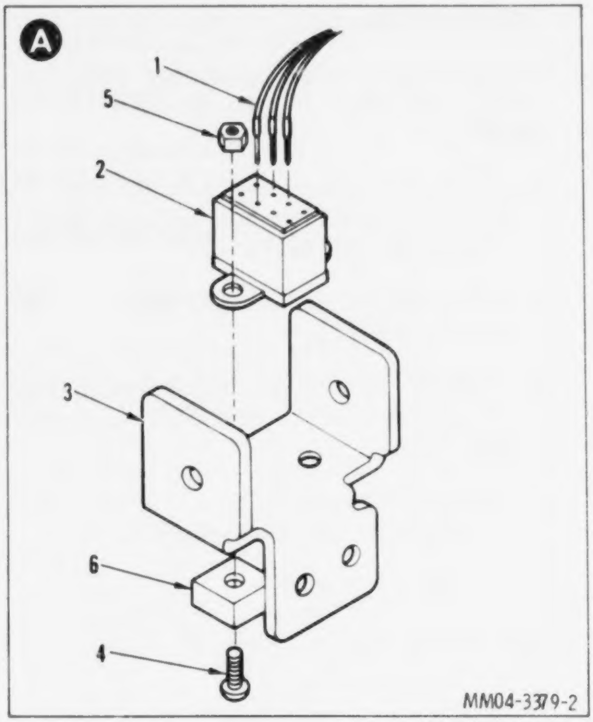
9-5-30. TERMINAL JUNCTION BOX REPLACEMENT (cont) 9-5-30



A. REMOVAL

NOTE

Identify each wire during removal for proper placement during installation.

1. **Depin wires (1) from terminal junction box (2).**
   - a. Identify wires (1).
   - b. Depin wires (1) from box (2).
2. **Remove box (2) from bus conductor (3).**
   - a. Hold two screws (4). Remove two nuts (5).
   - b. Remove box (2) from conductor (3).
   - c. Remove two screws (4) and insulators (6).

B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

1. **Check conductor for cracks.** None allowed.
2. **Check conductor for corrosion** (para 1-5-38).
3. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).
4. **Check conductor for of arcing** (TM 55-1500-323-24).

GO TO NEXT PAGE

9-5-30. TERMINAL JUNCTION BOX REPLACEMENT (cont)

D. INSTALLATION

1. **Install box (2) on conductor (3).** Torque two nuts (5) to **22 INCH-POUNDS.**

   a. Apply silicone compound (E111) between junction box (2) and bus conductor assembly (3).

   b. Aline holes of box (2) and conductor (3).

   c. Install two screws (4) through two insulators (6), conductor (3), and box (2).

   f. Install two nuts (5). Torque two nuts (5) to **22 INCH-POUNDS.**

   NOTE

   Wait 20 to 30 minutes.

2. **Retorque two nuts (5) to 22 INCH-POUNDS.**

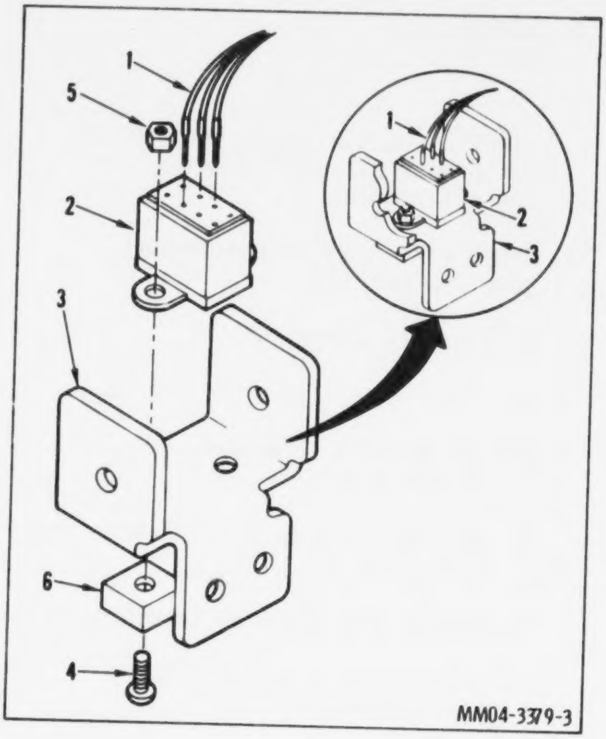
3. **Repin identified wires (1) in junction box (2).**

4. **Inspect (TI).**

5. **Install bus conductor** (para 9-5-29).

6. **Install power distribution box cover** (para 2-3-44).

7. **Perform DC power generation operational check** (TM 55-1520-238-T).



END OF TASK

9-5-31. EMERGENCY BUS TERMINAL BOARD REPLACEMENT 9-5-31

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

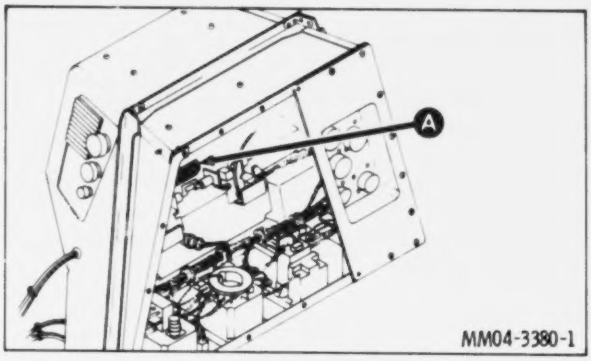
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-44	Electrical power distribution box cover removed



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9-5-31. EMERGENCY BUS TERMINAL BOARD REPLACEMENT (cont) 9-5-31

A. REMOVAL

1. **Remove terminal board cover (1) from emergency bus terminal board (2).**

   a. Loosen two nuts (3) and (4).

   b. Remove cover (1) from board (2).

   NOTE

   Identify each wire and terminal during removal, for proper placement during installation.

2. **Remove wires (5) from board (2).**

   a. Identify wires (5).

   b. Remove four nuts (6) and washers (7).

   c. Remove wires (5) from board (2).

3. **Remove bus conductor (8) from board (2).**

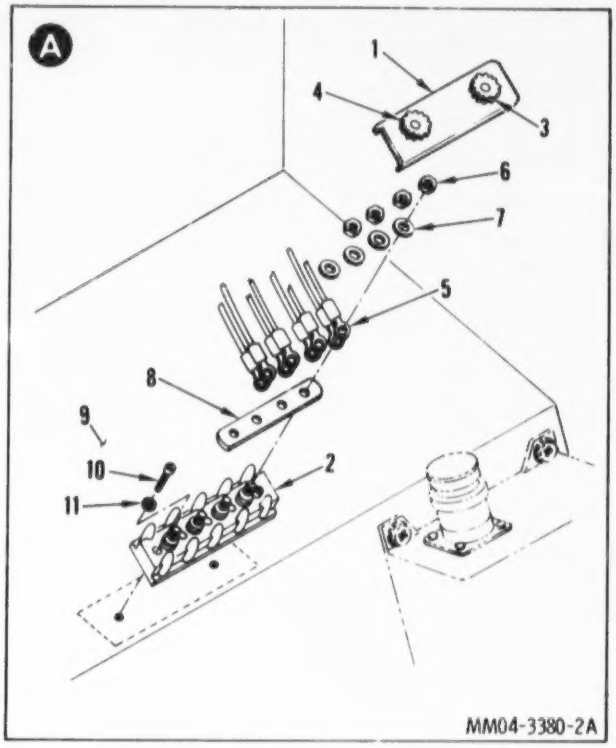
4. **Remove board (2) from power distribution box (9).**

   a. Remove two screws (10) and washers (11).

   b. Remove board (2) from box (9).

B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).



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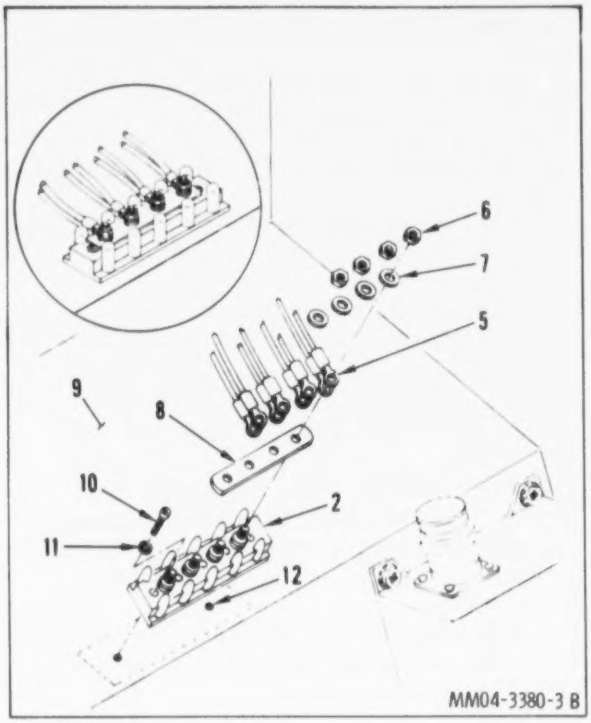
9-5-31. EMERGENCY BUS TERMINAL BOARD REPLACEMENT (cont) 9-5-31

C. INSPECTION

1. Check for damaged wires and terminal lugs (TM 55-1500-323-24).

2. Check all removed and attaching parts and surfaces for corrosion (para 1-5-38).

3. Check nutplates on power distribution box for stripped or damaged threads. None allowed.



D. INSTALLATION

1. Install board (2) on box (9).

   a. Aline holes of board (2) with nutplates (12) on box (9).

   b. Install two screws (10) through two washers (11) and board (2) into box (9).

   c. Tighten two screws (10).

2. Attach wires (5).

   a. Aline holes of conductor (8) with board (2). Install conductor (8) on board (2).

   b. Install identified wires (5) on board (2).

   c. Install four washers (7) and nuts (6) on board (2).

   d. Tighten nuts (6).

3. Inspect (TI).

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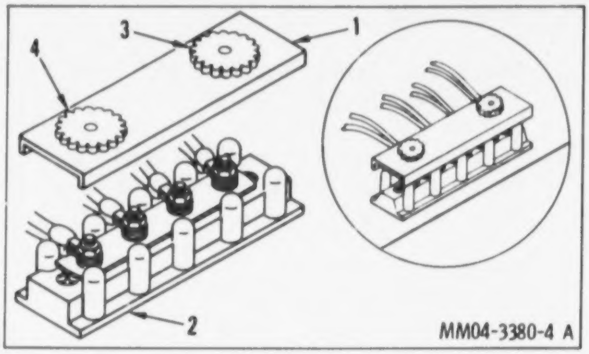
9-5-31. EMERGENCY BUS TERMINAL BOARD REPLACEMENT (cont) 9-5-31



4. Install cover (1) on board (2).

a. Aline holes of cover (1) with board (2).

b. Install cover (1) on board (2).

c. Tighten two nuts (3) and (4) on cover (1).

5. Perform DC power generation operational check (TM 55-1520-238-T).

END OF TASK

SECTION VI. LIGHTING PROVISIONS COMPONENTS MAINTENANCE

9-6-1. LIGHTING PROVISIONS COMPONENTS INSPECTION 9-6-1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

References:

TM 55-1500-323-24

1. Check components for damage and loose mounting.
2. Check for loose, missing, or damaged mounting hardware.
3. Check wiring for cracked, broken, or burned insulation.
4. Check wire terminals for deformation and loose attachment.
5. Check navigation, anticollision, and formation lights for loose mounting and loose or missing hardware.
6. Check navigation, anticollision, and formation lights for cracked or discolored lenses. Check for evidence of moisture.
7. Check interior and exterior lights for defective lamps (TM 55-1500-323-24).
8. Check pilot and CPG lighting control panels for loose mounting and cracked or broken edge lighted panels.
9. Inspect pilot and CPG lighting switches for loose mounting and loose or broken knobs.
10. Inspect cockpit interior lighting for loose mounting, chafed or broken wires, and loose connections.

END OF TASK

9-6-2. SEARCHLIGHT REMOVAL 9-6-2

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1500-323-24

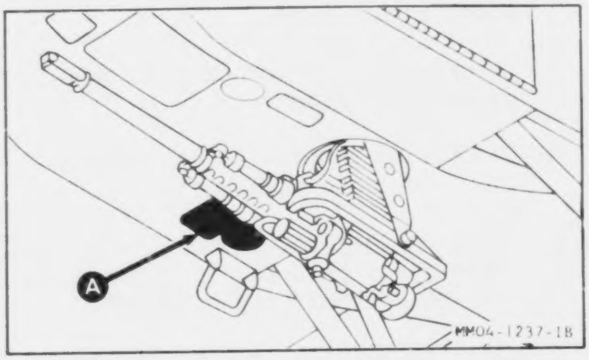
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open LT SRCH/LDG and LT SRCH/LDG CONTR circuit breakers on pilot center circuit breaker panel.



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9-6-2. SEARCHLIGHT REMOVAL (cont)

3. **Remove searchlight (1).** Remove 12 screws (2) and washers (3).

4. **Remove terminal cover (4).** Remove two screws (5) and washers (6).

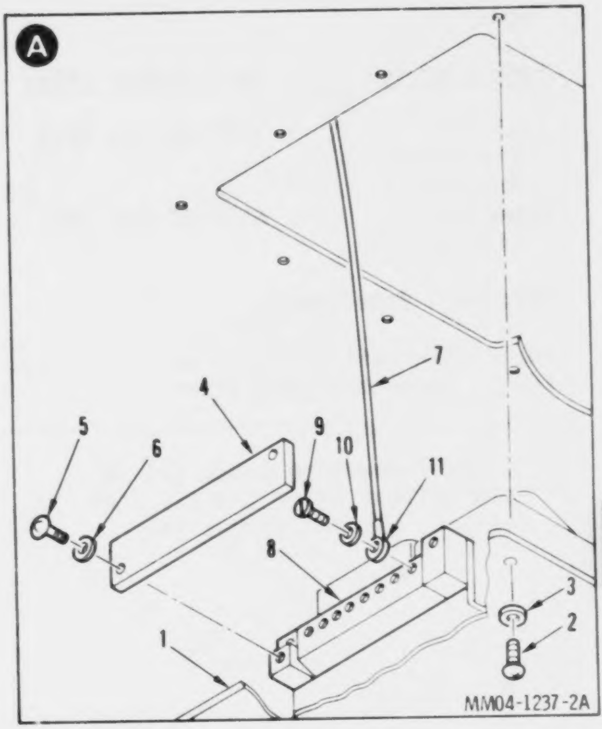
NOTE

Identify each wire and terminal during removal for proper placement during installation.

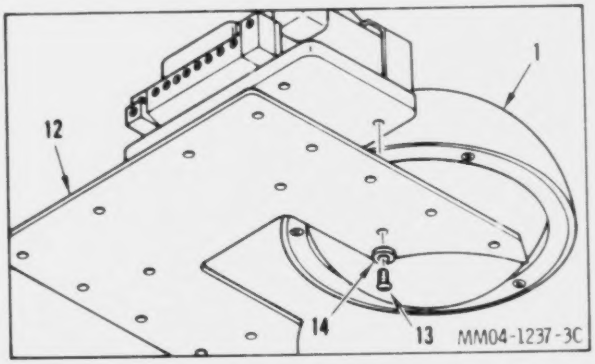
5. **Detach wires (7) from terminal board (8).**

   a. Identify wires (7).

   b. Remove screws (9), washers (10), and terminal lugs (11).



6. **Remove mounting plate (12) from searchlight (1).** Remove four screws (13) and washers (14).



B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

1. **Check for stripped threads.**

2. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).

END OF TASK

9-6-3. SEARCHLIGHT INSTALLATION 9-6-3

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

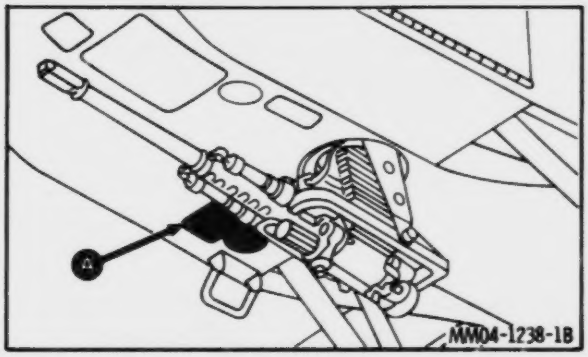
References:

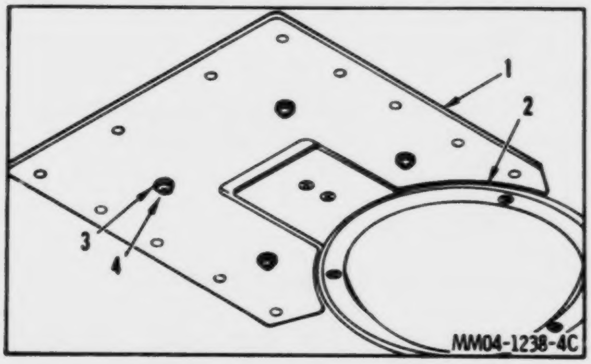
TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

1. **Install mounting plate (1) on searchlight (2). Install four washers (3) and screws (4).**





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9-6-3. SEARCHLIGHT INSTALLATION (cont) 9-6-3

2. **Attach wires (5) to terminal board (6).** Install two screws (9) through washers (8) and lugs (7) into board (6).

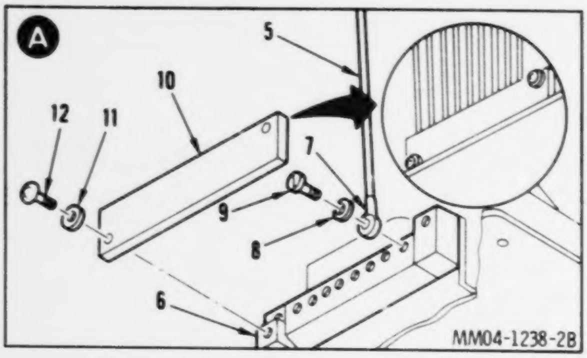
3. **Install terminal cover (10).** Install two screws through washers (11) and cover (10) into board (6).

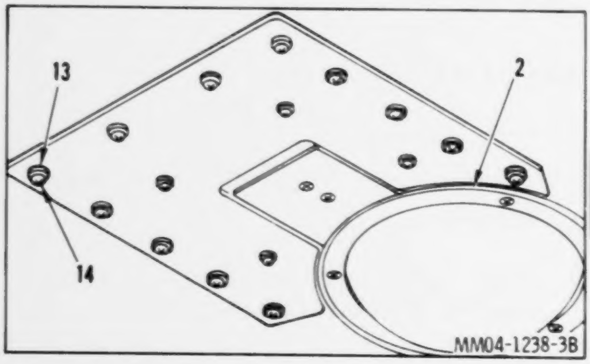
4. **Install searchlight (2).** Install 12 screws (14) through washers (13) into searchlight (2).

5. **Perform bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

6. **Inspect (TI).**

7. **Perform landing/searchlight operational check** (TM 55-1520-238-T).





END OF TASK

9-6-4. ANTICOLLISION LIGHT REMOVAL/INSTALLATION 9-6-4

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Materials/Parts:

Gasket

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

2. **Open LT ANTI COL circuit breaker on pilot center circuit breaker panel.**

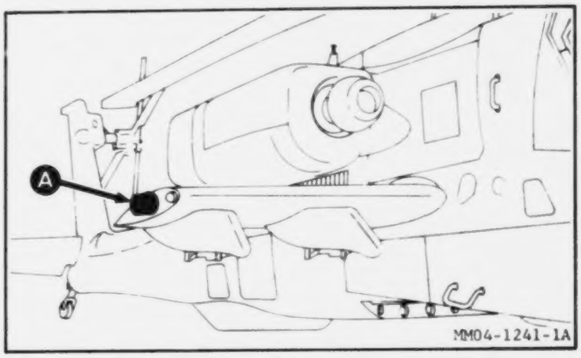
NOTE

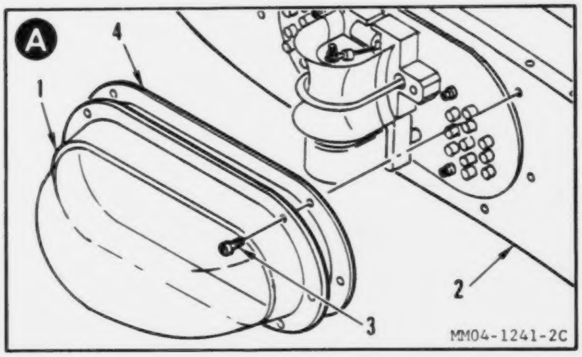
This task is typical for left and right anticollision lights DS8 or DS9.

3. **Remove anticollision light cover (1) from wingtip (2).**

   a. Remove six screws (3).

   b. Remove and discard gasket (4).





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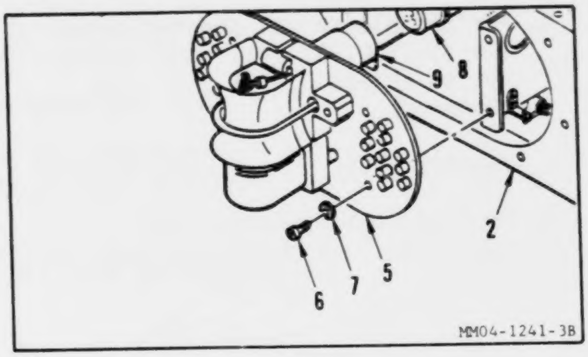
9-6-4. ANTICOLLISION LIGHT REMOVAL/INSTALLATION (cont) 9-6-4

4. Remove anticollision light fixture (5) from wingtip (2). Remove four screws (6) and four washers (7).

5. Detach connector P105 (left) or P106 (right) (8) from connector DS8J1 (left) or DS9J1 (right) (9).



B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

1. Check wires for wear, cuts, and breaks (TM 55-1500-323-24).

2. Check connector for bent pins or damaged threads (TM 55-1500-323-24).

3. Check for corrosion (para 1-5-38).

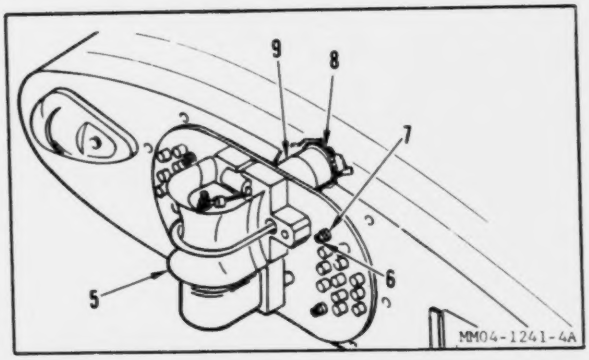
D. INSTALLATION

1. Attach connector P105 (left) or P106 (right) (8) to connector DS8J1 (left) or DS9J1 (right) (9).

2. Install anticollision light fixture (5) on wingtip (2).

   a. Position fixture (5) on wing tip (2).

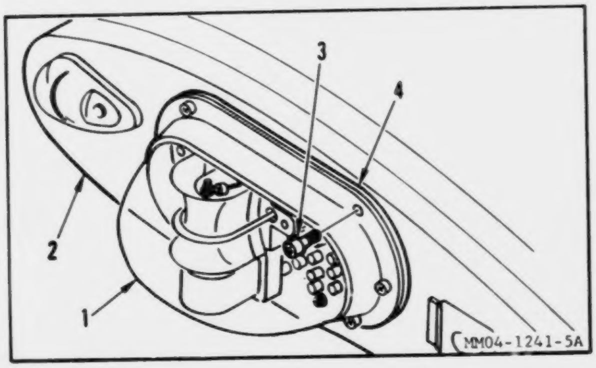
   b. Install four washers (7) and screws (6).



3. Install light cover (1) on wingtip (2).

   a. Install new gasket (4) on cover (1).

   b. Install six screws (3) through cover (1) and gasket (4) into wingtip (2).



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9-6-4. ANTICOLLISION LIGHT REMOVAL/INSTALLATION (cont) 9-6-4

4. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohm. Use ohmmeter.

5. **Inspect (TI).**

6. **Perform anticollision light** operational check (TM 55-1520-238-T).

END OF TASK

9-6-5. ANTICOLLISION LIGHT POWER SUPPLY REMOVAL/INSTALLATION 9-6-5

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

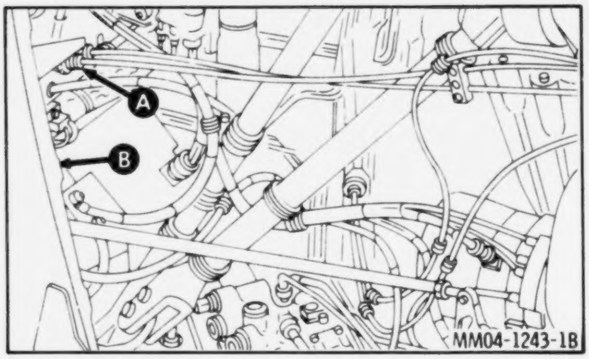
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panel L200 removed
13-2-10	Air duct No. 6 disconnected from air duct No. 5

A. REMOVAL

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

2. **Open LT ANTI COL circuit breaker on pilot center circuit breaker panel.**



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9-6-5. ANTICOLLISION LIGHT POWER SUPPLY REMOVAL/INSTALLATION (cont) 9-6-5

WARNING

The anticollision light power supply is high voltage. Wait 10 minutes after power has been removed before maintenance so high voltage can discharge. Failure to observe this warning may result in death or injury to personnel. If injury occurs, seek medical aid.

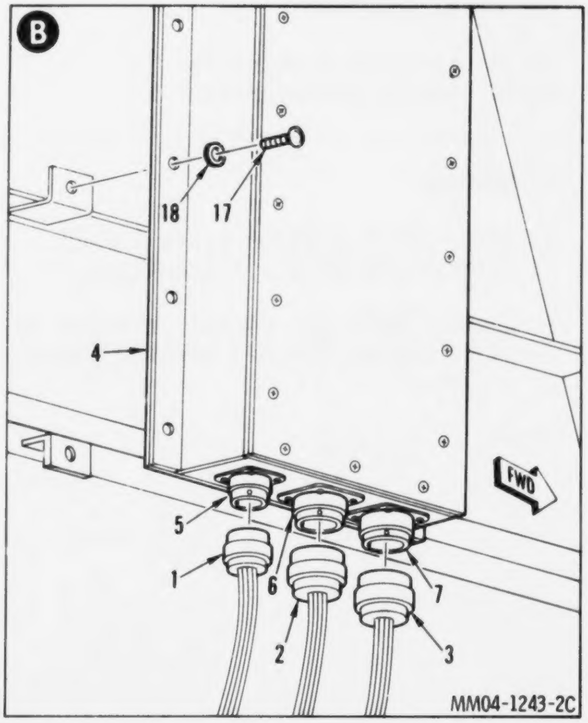
3. **Detach three connectors (1), (2), and (3) from power supply (4).**
   a. Detach connector P102 (1) from connector PS5J1 (5).
   b. Detach connector P103 (2) from connector PS5J2 (6).
   c. Detach connector P104 (3) from connector PS5J3 (7).
4. **Remove cables** (8) **and (9) from bracket (10).**
   a. Hold screw (11).
   b. Remove nut (12) and washer (13).
   c. Remove screw (11), washer (14), and clamps (15) and (16) from bracket (10).
   d. Push cables (8) and (9) inboard to access power supply (4).
5. **Remove power supply (4).** Remove four screws (17) and washers (18).

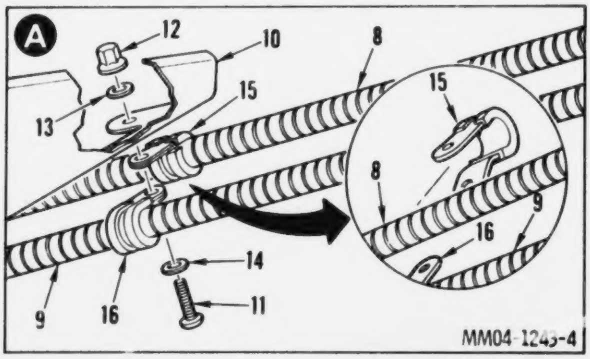
B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

Check connectors for damage and for cracked, cut, broken wires, bent pins, or damaged threads (TM 55-1500-323-24).





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9-6-5. ANTICOLLISION LIGHT POWER SUPPLY REMOVAL/INSTALLATION (cont) 9-6-5

D. INSTALLATION

1. **Install power supply (4) on mounting bracket (19).** Install four screws (17) and four washers (18).

2. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. **Attach three connectors (1), (2), and (3) to power supply (4).**

   a. Attach connector P102 (1) to connector PS5J1 (5).

   b. Attach connector P103 (2) to connector PS5J2 (6).

   c. Attach connector P104 (3) to connector PS5J3 (7).

4. **Install cables (8) and (9) on bracket (10).**

   a. Install screws (11) through washer (14), clamp (16), clamp (15), bracket (10).

   b. Hold screw (11).

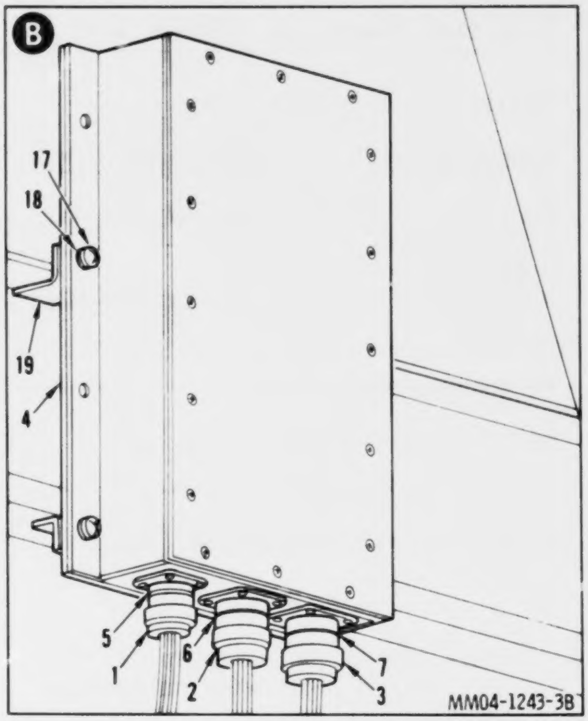
   c. Install washer (13) and nut (12).

5. **Inspect (TI).**

6. **Perform anticollision light operational check** (TM 55-1520-238-T).

7. **Install air duct No. 6 on air duct No. 5** (para 13-2-10).

8. **Secure access panel L200** (para 2-2-2).



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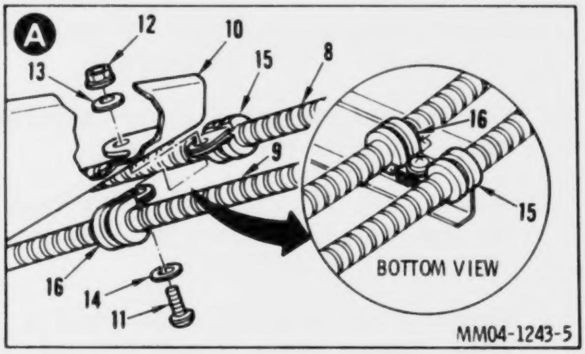


MM04-1243-5

END OF TASK

9-6-6. NAVIGATION LIGHT REMOVAL 9-6-6

This task covers: A. REMOVAL WING B. REMOVAL TAIL C. CLEANING D. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Maintenance Stand	1730-00-269-8283

Personnel Required:

68F10 Aircraft Electrician

References:

TM 55-1500-323-24

Equipment Conditions:

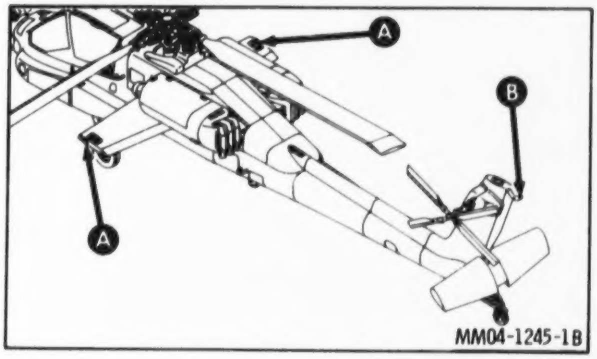
Ref	Condition
1-7-2	Helicopter safed

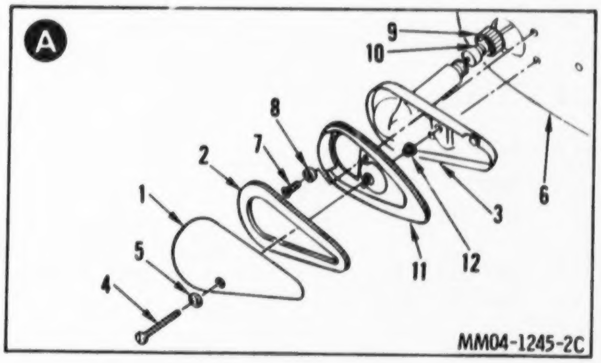
A. REMOVAL WING NAVIGATION LIGHTS

NOTE

Steps 1 through 6 are typical for left and/or right wing navigation light.

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**
2. **Open LT NAV circuit breaker on pilot center circuit breaker panel.**
3. **Remove lens (1) and gasket (2) from navigation light base (3).** Remove screw (4) and washer (5).
4. **Remove light base (3) from wingtip (6).** Remove three screws (7) and washers (8).
5. **Detach nut (9) from light base (3).** Detach nut (9) with spring (10) from base (3).
6. **Remove plate (11) and clinch nut (12) from base (3).**





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9-6-6. NAVIGATION LIGHT REMOVAL (cont) 9-6-6

B. REMOVAL-TAIL NAVIGATION LIGHT

NOTE

The following steps are for removal of the tail navigation light.

1. **Enter pilot station** (para 1-7-1). Observe all safety precautions.
2. **Open LT NAV circuit breaker on pilot center circuit breaker panel.**
3. **Remove access panel R578** (para 2-2-2). Use maintenance stand.
4. **Remove tail navigation light adapter (13) from vertical stabilizer (14).**
   a. Remove three screws (15) from adapter (13) and mount (16).
   b. Loosen clamp (17).
   c. Pull adapter (13) clear of mount (16).

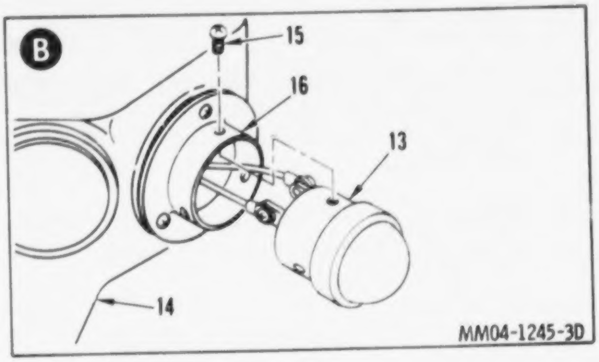
NOTE

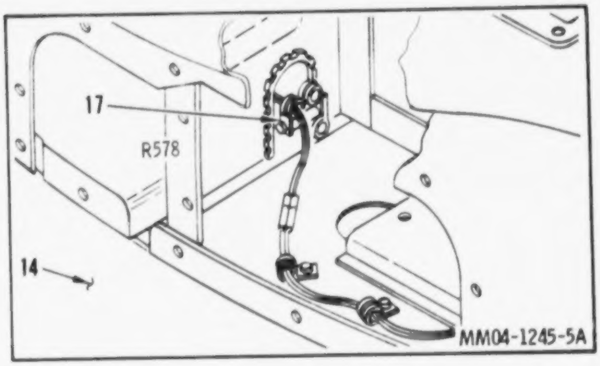
Identify each wire and terminal during removal, for proper placement during installation.

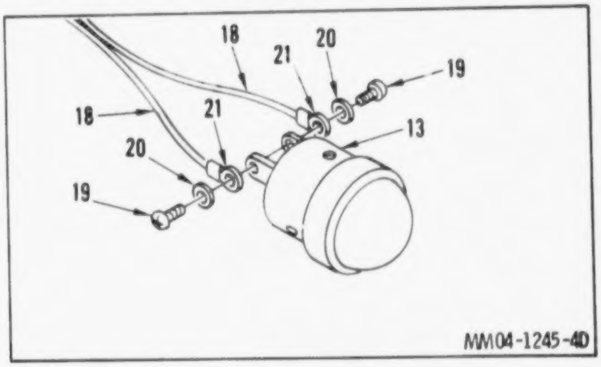
5. **Detach wires (18) from adapter (13).**
   a. Identify wires (18).
   b. Remove two screws (19), washers (20), and terminal lugs (21).

C. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).







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D. INSPECTION

1. **Check clinch nut, mounting area, and connector for stripped threads.** Damage not to exceed 50 percent of one thread.

2. **Check right or left wing electrical wires and connectors for damage** (TM 55-1500-323-24).

3. **Check electrical wire leads and connector in tail navigation light for loose mounting** (TM 55-1500-323-24).

4. **Check for corrosion** (para 1-5-38).

END OF TASK

9-6-7. NAVIGATION LIGHT INSTALLATION 9-6-7

This task covers: A. INSTALLATION WING B. INSTALLATION TAIL

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Maintenance Stand	1730-00-269-8283
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Materials/Parts:

MS23053/5-104-9	Tubing, Heat Shrinkable
MS23053/5-106-9	Tubing, Heat Shrinkable

Equipment Conditions:

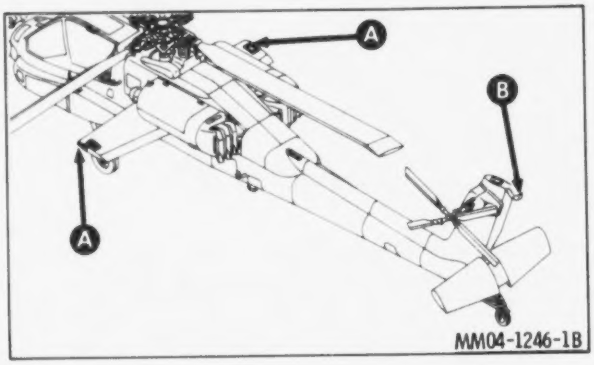
Ref	Condition
1-7-2	Helicopter safed

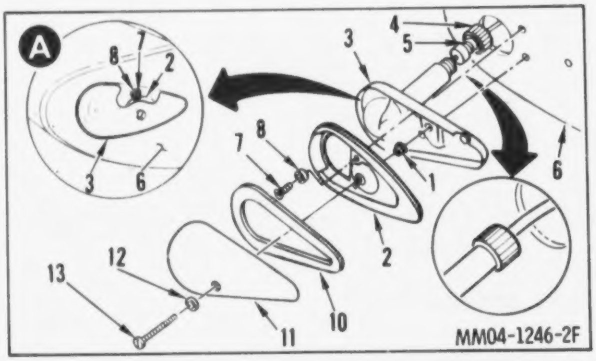
A. INSTALLATION-WING NAVIGATION LIGHT

NOTE

Steps 1 through 6 are typical for left and/or right wing navigation light.

1. **Install clinch nut (1) between plate (2) and light base (3).**
2. **Attach nut (4) to base (3).** Install nut (4) with spring (5) on base (3).
3. **Install base (3) in wingtip (6).**
   a. Position base (3) on wingtip (6). Install three screws (7) through three washers (8) into wingtip (6).
   b. Place gasket (10) and lens (11) into base (3).
   c. Install screw (13) through washer (12), lens (11), plate (2), and base (3) into wingtip (6).
4. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.
5. **Inspect (TI).**





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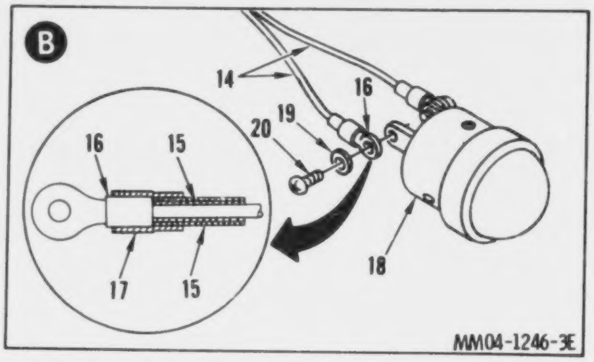
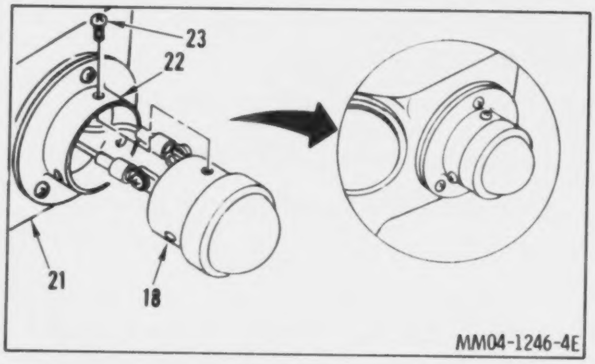
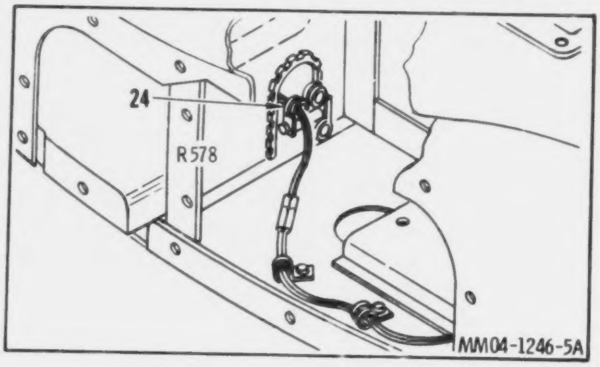
9-6-7. NAVIGATION LIGHT INSTALLATION (cont) 9-6-7

B. INSTALLATION-TAIL NAVIGATION LIGHT







NOTE

- The following steps are for installation of the tail navigation light.
- If heat shrink is installed on tail navigation light wires, go to step 4.

1. **On each wire (14), install 1.50 INCH length of heat shrink tubing (15) against terminal lug (16)** (TM 55-1500-323-24). Use MS23053/5-104-9.
2. **Install second 1.50 INCH length of tubing (15) around tubing installed in step 1** (TM 55-1500-323-24). Use MS23053/5-104-9.
3. **Install 1.00 INCH length of heat shrink tubing (17) around lug (16) and OVER tubing installed in step 2** (TM 55-1500-323-24). Use MS23053/5/106-9.
4. **Attach identified wires (14) to navigation light adapter (18).** Install two screws (20) through two washers (19) and lugs (16) into adapter (18).
5. **Install adapter (18) on stabilizer (21).**
   a. Insert adapter (18) in mount (22).
   b. Install three screws (23).
   c. Tighten clamp (24) behind access panel R578.
6. **Inspect (TI).**
7. **Secure access panel R578** (para 2-2-2).
8. **Perform bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.
9. **Perform navigation light operational check** (TM 55-1520-238-T).

END OF TASK

9-6-8. FORMATION LIGHT REMOVAL/INSTALLATION 9-6-8

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

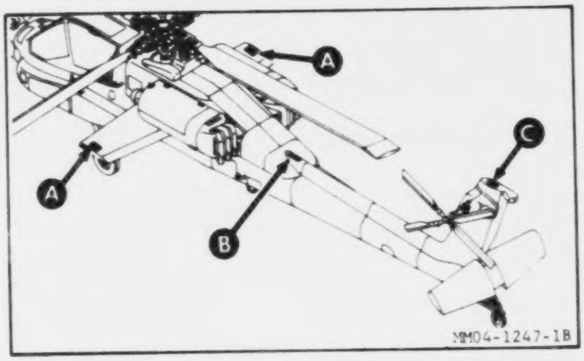
TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.
2. Open LT FORM circuit breaker on pilot center circuit breaker panel.



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9-6-8. FORMATION LIGHT REMOVAL/INSTALLATION (cont) 9-6-8

NOTE

- Step 3 typical for left and/or right wing formation light.
- Identify each wire and terminal during removal, for proper placement during installation.

3. **Remove wingtip formation light (1).**

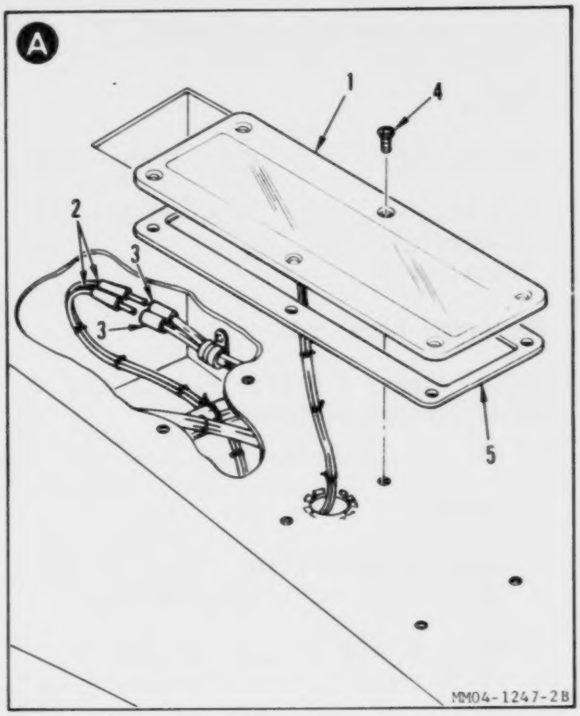
   a. Open access door LW8 or RW8 (para 2-2-2).

   b. Identify and detach two wires (2) from two splices (3).

   c. Remove six screws (4).

   d. Remove light (1).

   e. Remove gasket (5).



4. **Remove fuselage formation light (6).**

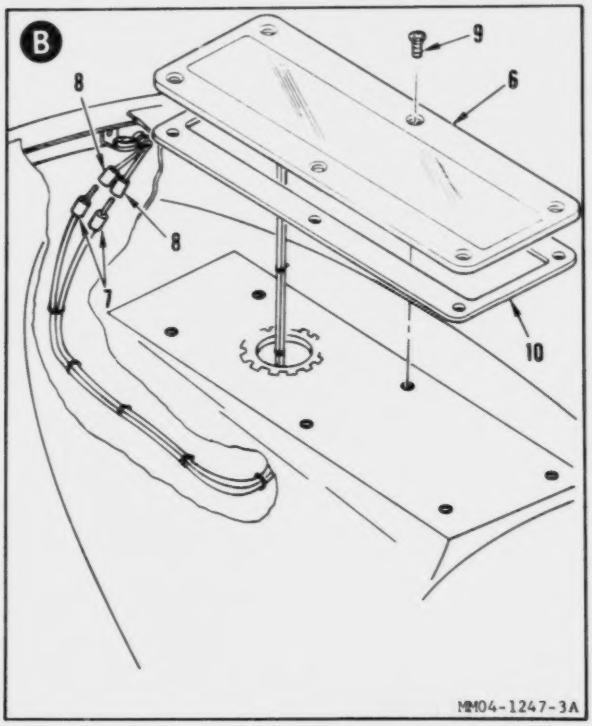
   a. Open access door T355 (para 2-2-2).

   b. Detach two wires (7) from two splices (8).

   c. Remove six screws (9).

   d. Remove light (6).

   e. Remove gasket (10).



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9-6-8. FORMATION LIGHT REMOVAL/INSTALLATION (cont) 9-6-8

5. **Remove vertical stabilizer formation light (11).**

   a. Open access door T545 (para 2-2-2).

   b. Detach two wires (12) from two splices (13).

   c. Remove six screws (14).

   d. Remove light (11).

   e. Remove gasket (15).

B. **CLEANING**

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. **INSPECTION**

1. **Check wires for cracks, cuts, breaks, and damaged splices** (TM 55-1500-323-24).

2. **Check light for cracks, broken lens, and damaged threads.** No cracks allowed. Thread damage not to exceed 50 percent of one thread. Replace broken lens.

D. **INSTALLATION**

1. **Install wingtip formation light (1).**

   a. Position gasket (5) and light (1) on wing (16).

   b. Aline light (1) with mounting holes on wingtip. Install six screws (4)through light (1) and gasket (5) into wing (16).

   c. Attach identified wires (2) to two splices (3).

2. **Inspect (TI).**

3. **Secure access door LW8 or RW8** (para 2-2-1).

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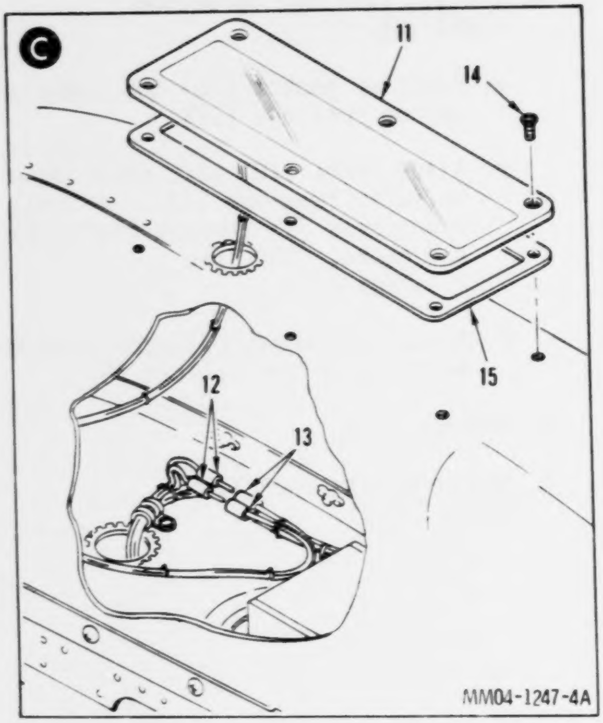

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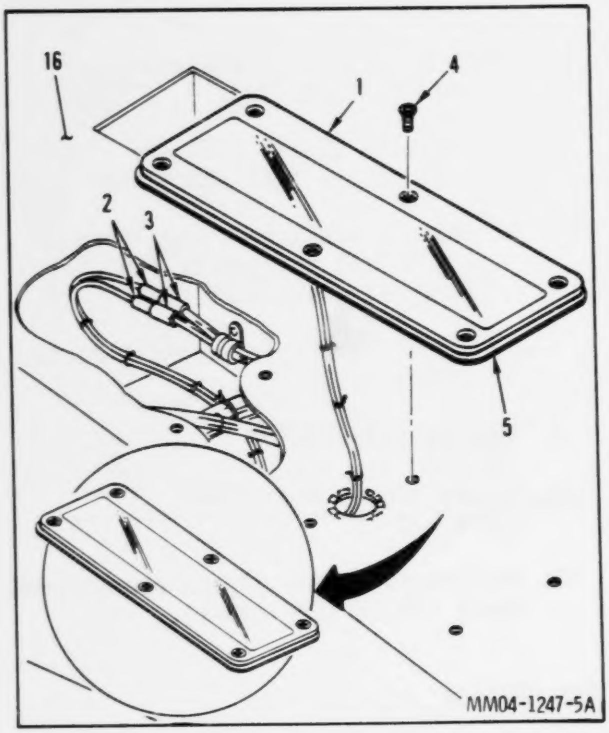

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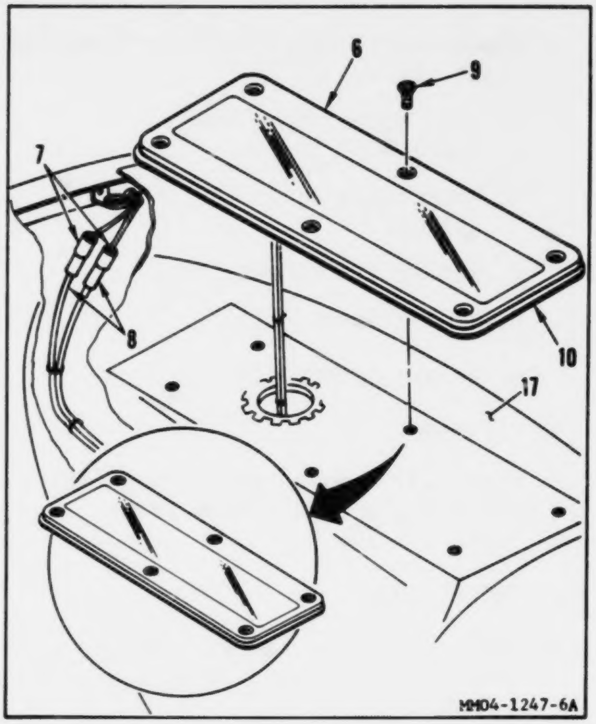
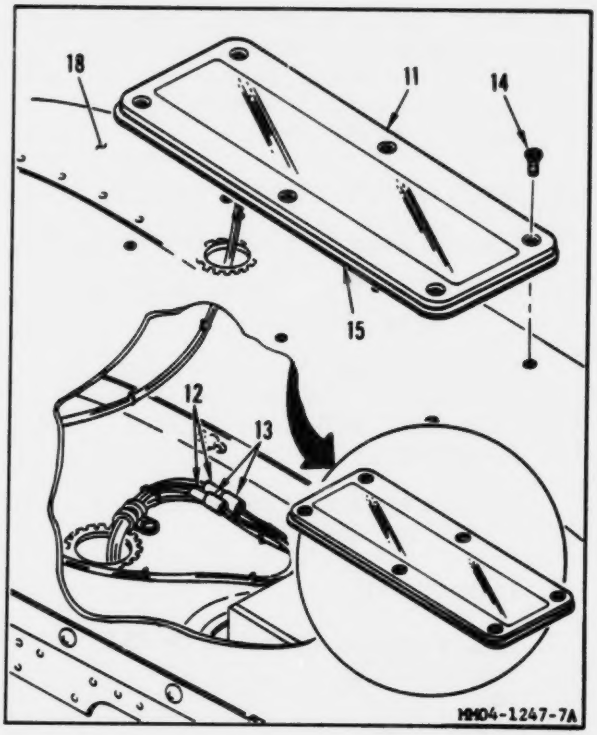
9-6-8. FORMATION LIGHT REMOVAL/INSTALLATION (cont) 9-6-8

4. **Install fuselage formation light (6).**
   a. Position gasket (10) and light (6) on fuselage (17).
   b. Aline light (10) with mounting holes in fuselage (17). Install six screws (9) through light (6) and gasket (10) into fuselage (17).
   c. Attach two wires (7) according to markings to two splices (8).
5. **Inspect (TI).**
6. **Secure access door T355 (para 2-2-2).**



7. **Install vertical stabilator formation light (11).**
   a. Position gasket (15) and light (11) on vertical stabilator (18).
   b. Install six screws (14) through light (11) and gasket (15) into vertical stabilator (18).
   c. Attach identified wires (12) to splices (13).
8. **Inspect (TI).**
9. **Secure access door T545 (para 2-2-2).**
10. **Perform formation lights operational check (TM 55-1520-238-T).**



END OF TASK

9-6-9. PILOT EXT LT/INTR LT PANEL REMOVAL/INSTALLATION 9-6-9

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3417

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

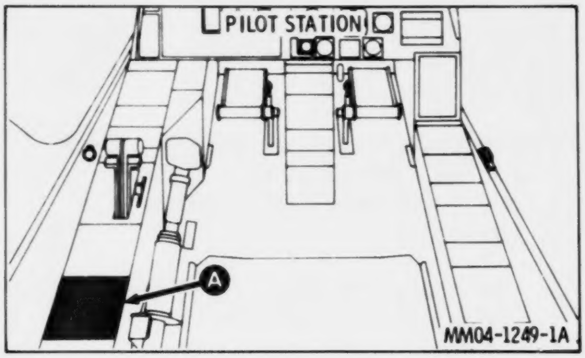
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

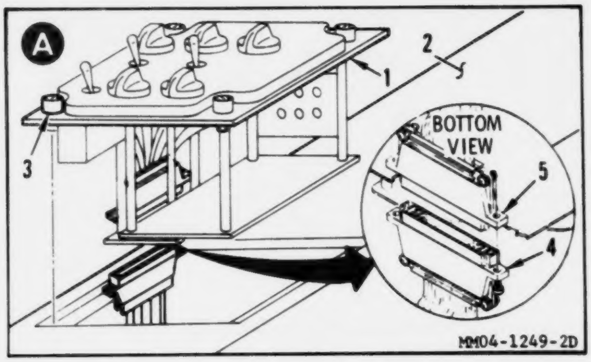
1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open eight LT circuit breakers on pilot center circuit breaker panel.



3. Remove pilot EXT LT/INTR LT panel (1) from pilot left console (2). Unlock four Camloc fasteners (3).

4. Detach connector P100 (4) from connector A133J1 (5) on panel (1).



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9-6-9. PILOT EXT LT/INTR LT PANEL REMOVAL/INSTALLATION (cont) 9-6-9

B. CLEANING

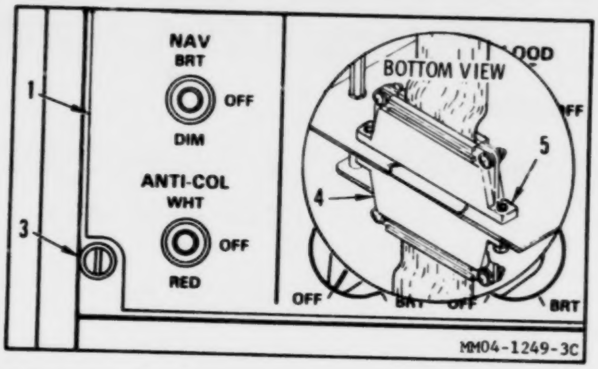
Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

Check wires of connector P100 for cracks, cuts, and damaged connections (TM 55-1500-323-24).

D. INSTALLATION

1. Attach connector P100 (4) to connector A133J1 (5) on panel (1).
2. Inspect (TI).
3. Install pilot panel (1) in console (2). Lock four Camloc fasteners (3).
4. Perform electrical bonding check (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.
5. Perform pilot edge-light operational check (TM 55-1520-238-T).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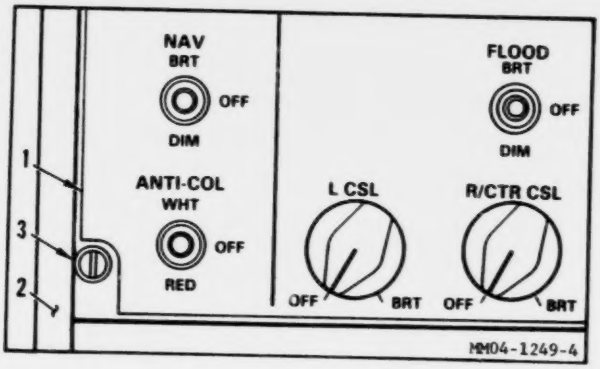
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MM04-1249-4

END OF TASK

9-6-10. CPG INTR LT PANEL REMOVAL/INSTALLATION 9-6-10

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3417

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

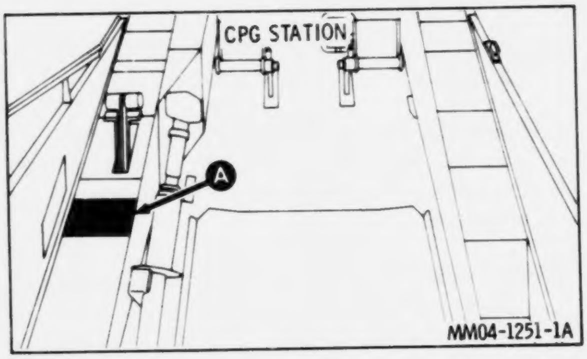
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

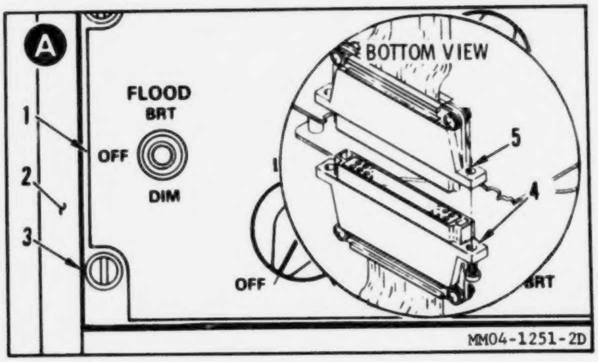
1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open PRI LT circuit breaker on CPG circuit breaker panel No. 1.


CPG STATION
A
MM04-1251-1A

3. Remove CPG INTR LT panel (1) from CPG left console (2). Unlock four Camloc fasteners (3).

4. Detach connector P101 (4) from connector A181J1 (5) on panel (1).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BRT
MM04-1251-2D

GO TO NEXT PAGE

9-6-10. CPG INTR LT PANEL REMOVAL/INSTALLATION (cont) 9-6-10

B. CLEANING

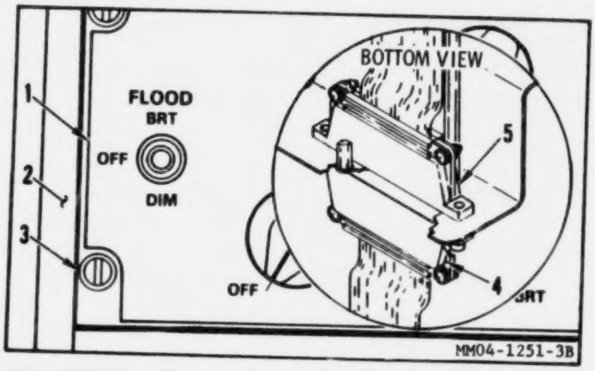
Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

Check protective sleeves and wires of connector for cracks, cuts, and damaged connections (TM 55-1500-323-24).

D. INSTALLATION

1. **Attach connector P101 (4) to connector A181J1 (5) on panel (1).**
2. Inspect (TI).
3. **Install panel (1) in console (2).** Lock four Camloc fasteners (3).
4. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.
5. **Perform CPG edge-light operational check** (TM 55-1520-238-T).


BOTTOM VIEW
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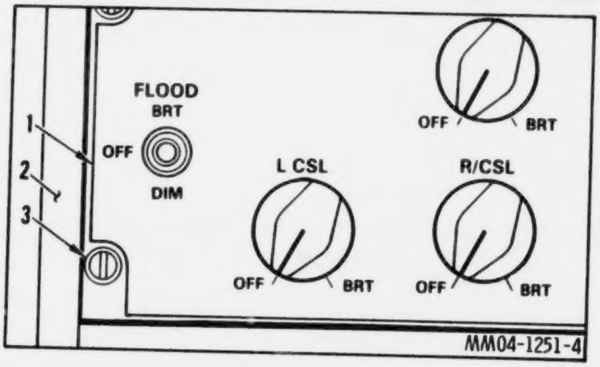
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BRT
MM04-1251-4

END OF TASK

9-6-11. CPG FLOODLIGHT SWITCH REPLACEMENT (AVIM) 9-6-11

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1500-323-24

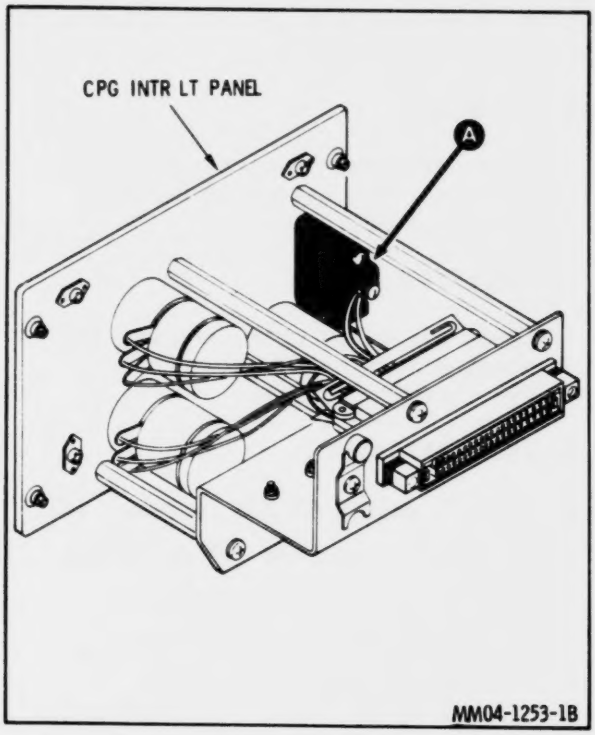
Equipment Conditions:

Ref	Condition
9-6-13	CPG INTR LT edge lighted panel removed

A. REMOVAL

NOTE

Identify each wire and terminal during removal, for proper placement during installation.



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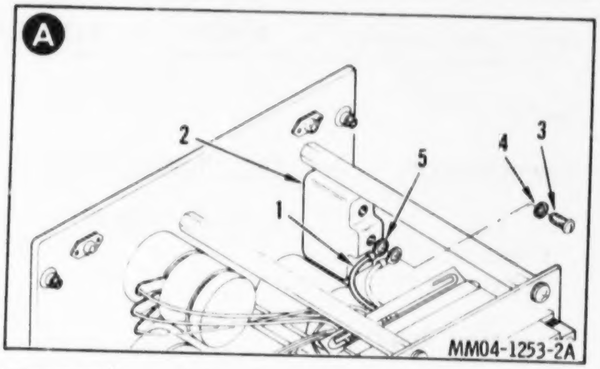
9-6-11. CPG FLOODLIGHT SWITCH REPLACEMENT (AVIM) (cont) 9-6-11

1. **Detach wires (1) from FLOOD switch S1 (2).**
   - a. Identify wires (1).
   - b. Remove three screws (3), lock washers (4), and terminal lugs (5).


A
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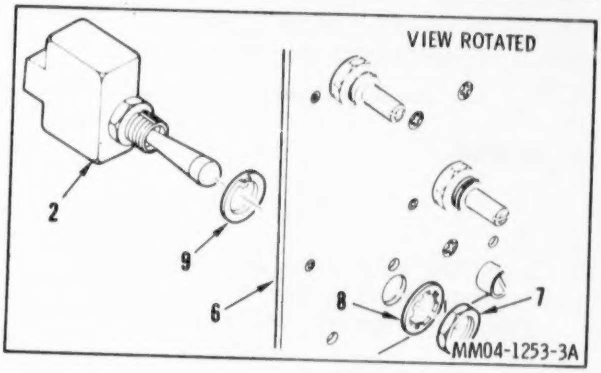
1
MM04-1253-2A

2. **Remove FLOOD switch S1 (2) from CPG INTR LT panel (6).**
   - a. Remove nut (7) and lock washer (8).
   - b. Remove switch (2) and lockring (9) from panel (6).


VIEW ROTATED
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8
7
MM04-1253-3A

B. **CLEANING**

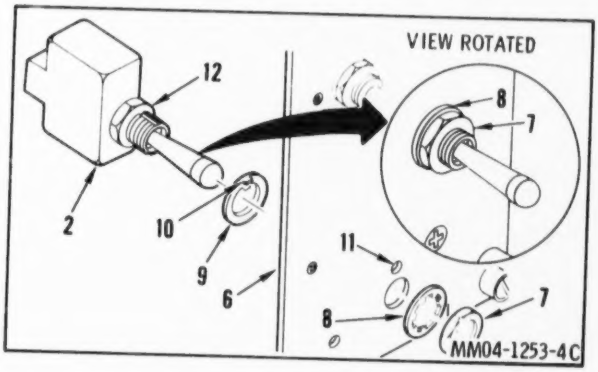
Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. **INSPECTION**

Check wires for cuts, cracks, and damaged terminal lugs (TM 55-1500-323-24).

D. **INSTALLATION**

1. **Install switch S1 (2) on panel (6).**
   - a. Install lockring (9) on switch (2).
   - b. Install switch (2) in panel (6) so tab (10) on lockring (9) seats in locator hole (11).
   - c. Adjust length of switch (2) through panel (6) with adjustment nut (12) so one to four threads of switch (2) extend past nut (7).
   - d. Install lock washer (8) and nut (7).


VIEW ROTATED
12
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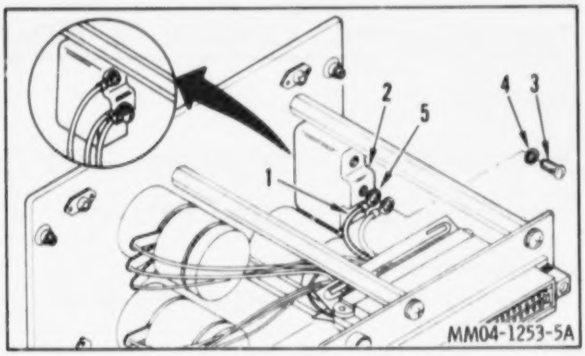
8
7
MM04-1253-4C

GO TO NEXT PAGE

9-6-11. CPG FLOODLIGHT SWITCH REPLACEMENT (AVIM) (cont) 9-6-11



2. **Attach wires (1) to FLOOD switch S1 (2).** Install three screws (3) through lock washers (4), and lugs (5) into switch (2).

3. **Inspect (TI).**

4. **Install CPG INTR LT edge lighted panel** (para 9-6-13).

END OF TASK

9-6-12. CPG INST, R/CSL OR L/CSL ATTENUATOR (VARIABLE RESISTOR) REPLACEMENT (AVIM) 9-6-12

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Soldering Iron, Electric	3439-00-853-8760

Materials/Parts:

(E50) Solder

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1500-323-24

Equipment Conditions:

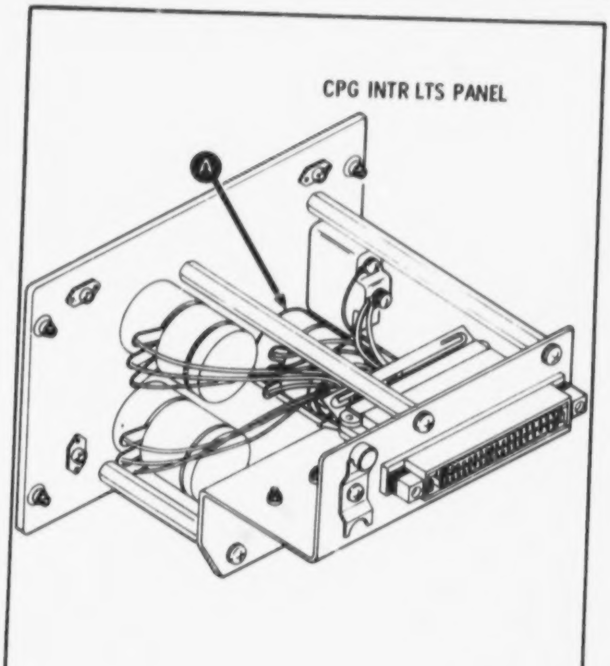
Ref	Condition
9-6-13	CPG INTR LT edge lighted panel removed

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

NOTE

- This task is typical for all attenuators (variable resistors).
- Identify each wire and terminal during removal, for proper placement during installation.



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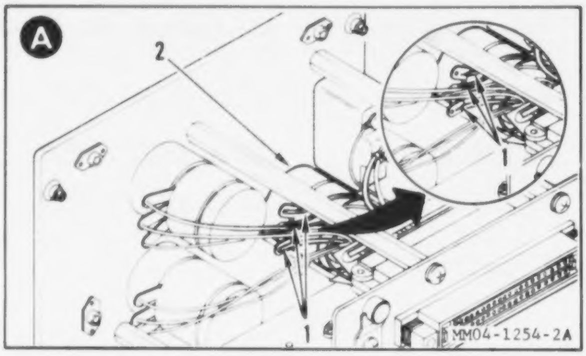
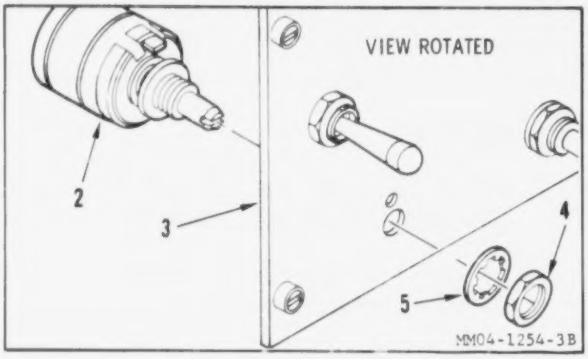
9-6-12. CPG INST, R/CSL OR L/CSL ATTENUATOR (VARIABLE RESISTOR) REPLACEMENT (AVIM) (cont) 9-6-12

A. REMOVAL


A
2
1
1
MM04-1254-2A

1. **Detach three wires (1) from attenuator (2).**
   a. Identify wires (1).
   b. Detach wires (1). Use soldering iron (TM 55-1500-323-24).
2. **Remove attenuator (2) from CPG INTR LT panel (3).**
   a. Remove nut (4) and lock washer (5).
   b. Remove attenuator (2) from panel (3).


VIEW ROTATED
2
3
4
5
MM04-1254-3B

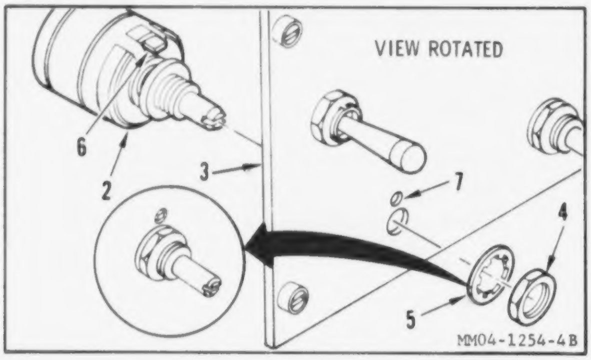
B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

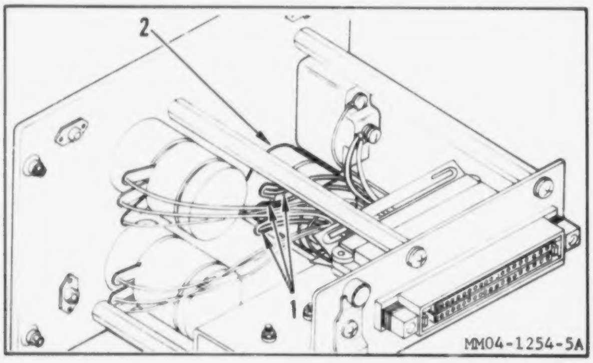
C. INSPECTION

Check wires for cuts, cracks, and damaged connections (TM 55-1500-323-24).

D. INSTALLATION


VIEW ROTATED
6
2
3
7
4
5
MM04-1254-4B

1. **Install attenuator (2) in panel (3).**
   a. Insert attenuator (2) in panel (3) so tab (6) seats in locator hole (7).
   b. Install lock washer (5) and nut (4).
2. **Attach wires (1) to attenuator (2).** Solder identified wires (1). Use soldering iron and solder (E50) (TM 55-1500-323-24).
3. **Inspect (TI).**
4. Install CPG INTR LT edge lighted panel (para 9-6-13).


2
1
MM04-1254-5A

END OF TASK

9-6-13. CPG INTR LT EDGE LIGHTED PANEL REPLACEMENT 9-6-13

This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

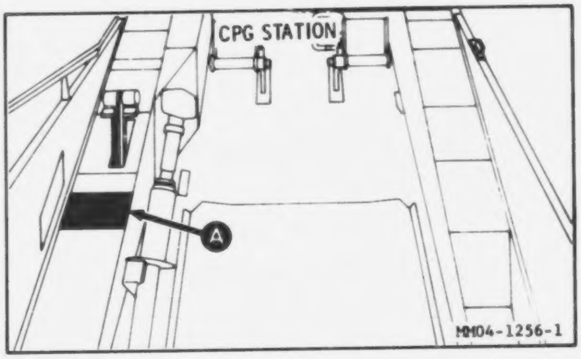
Ref	Condition
1-7-2	Helicopter safed
9-6-14	CPG INTR LT control knobs removed

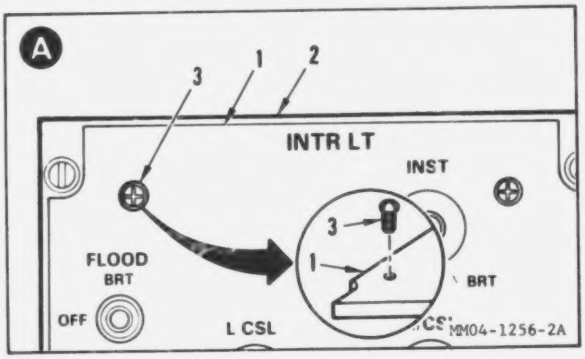
A. REMOVAL

1. Enter CPG station (para 1-7-1). Observe all safety precautions.
2. Open PRI LT circuit breaker on CPG circuit breaker panel No. 1.
3. Remove edge lighted panel (1) from CPG INTR LT panel (2). Remove four screws (3).

B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).





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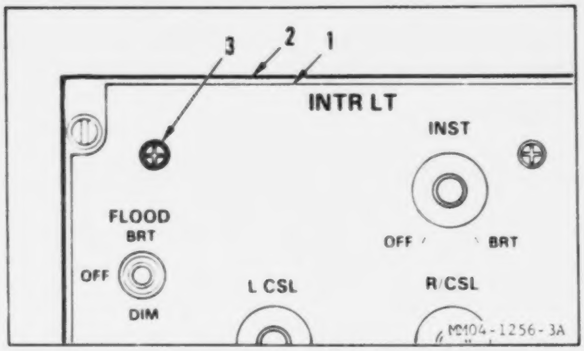
9-6-13. CPG INTR LT EDGE LIGHTED PANEL REPLACEMENT (cont) 9-6-13

C. INSTALLATION

1. Install panel (1) on panel (2).
   Install four screws (3).
2. Inspect (TI).
3. Install three control knobs on CPG INTR LT panel (para 9-6-14).
4. Perform CPG edge light operational check (TM 55-1520-238-T).


3
2
1
INTR LT
INST
FLOOD
BRT
OFF
BRT
OFF
DIM
L CSL
R/CSL
M104-1256-3A

END OF TASK

9-6-14. CPG INTR LT CONTROL KNOB REPLACEMENT 9-6-14

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

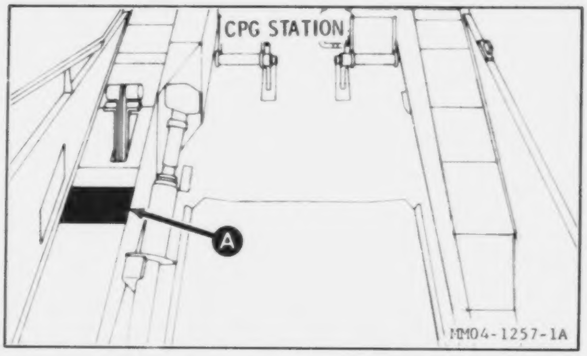
1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

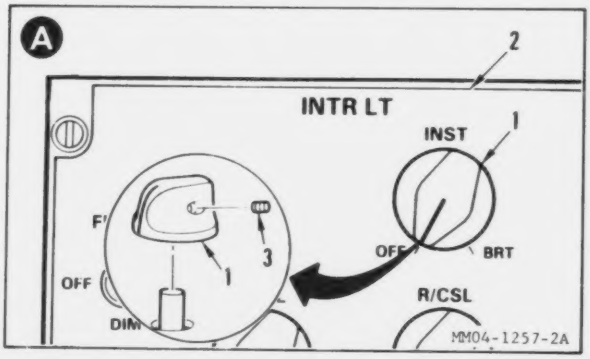
2. **Set all switches and controls on CPG INTR LT panel to OFF.**

NOTE

This task is typical for all control knobs.

3. **Remove control knob (1) from INTR LT panel (2).** Loosen two setscrews (3).





B. CLEANING

Clean knobs and setscrews (para 1-5-36).

C. INSPECTION

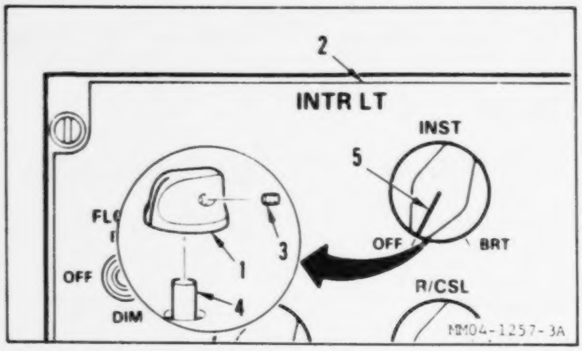
Check knobs for damaged threads, cracks, or wear. No cracks allowed. Thread damage not to exceed 50 percent of one thread.

GO TO NEXT PAGE

9-6-14. CPG INTR LT CONTROL KNOB REPLACEMENT (cont) 9-6-14

D. INSTALLATION

1. **Install knob (1) on panel (2).**
   - a. Position knob (1) on shaft (4).
   - b. Set control knob pointer (5) to OFF.
   - c. Tighten two setscrews (3).
2. **Inspect (TI).**
3. **Perform CPG edge light operational check** (TM 55-1520-238-T).


2
INTR LT
INST
5
FL
OFF
DIM
1
3
4
OFF
BRT
R/CSL
MM04-1257-3A

END OF TASK

9-6-15. MULTICHANNEL DIMMING CONTROLLER UNIT REMOVAL/INSTALLATION 9-6-15

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

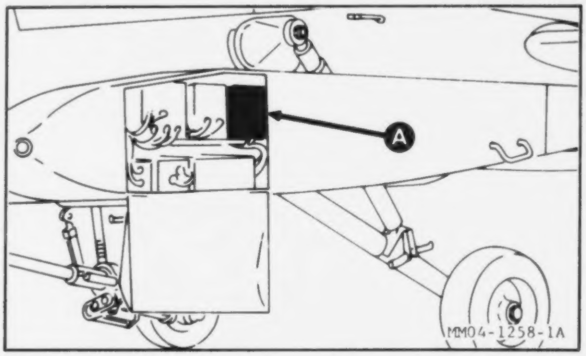
TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panel L90 open

A. REMOVAL

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**
2. **Open LT PRI circuit breaker on pilot center circuit breaker panel.**
3. **Enter CPG station (para 1-7-1). Observe all safety precautions.**
4. **Open PRI LT circuit breaker on CPG circuit breaker panel No. 1.**



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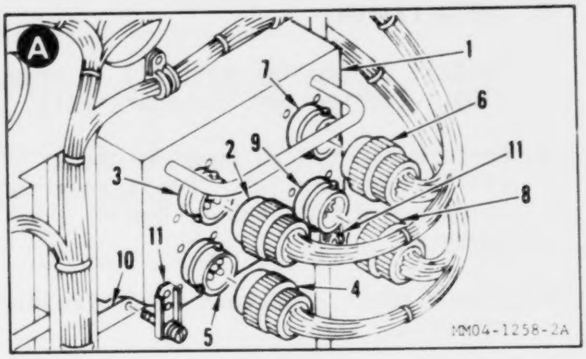
9-6-15. MULTICHANNEL DIMMING CONTROLLER UNIT REMOVAL/INSTALLATION (cont) 9-6-15



5. **Detach four connectors on multichannel dimming controller unit (1).**
    a. Detach connector P748 (2) from connector A403J2 (3).
    b. Detach connector P109 (4) from connector A403J3 (5).
    c. Detach connector P747 (6) from connector A403J1 (7).
    d. Detach connector P110 (8) from connector A403J4 (9).
6. **Remove controller unit (1) from mounting tray (10).** Loosen two captive fasteners (11).

B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

Check connectors for cracks, broken connections, or bent pins. No cracks allowed.

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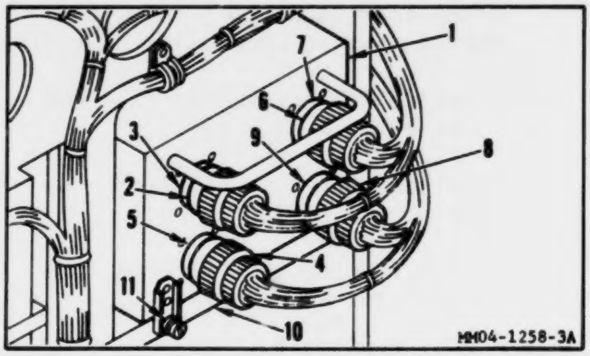
9-6-15. MULTICHANNEL DIMMING CONTROLLER UNIT REMOVAL/INSTALLATION (cont) 9-6-15



D. INSTALLATION

1. **Install controller unit (1) in tray (10).** Tighten two fasteners (11).

2. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. **Attach four connectors to controller unit (1).**

   a. Attach connector P748 (2) to connector A403J2 (3).

   b. Attach connector P104 (4) to connector A403J3 (5).

   c. Attach connector P747 (6) to connector A403J1 (7).

   d. Attach connector P110 (8) to connector A403J4 (9).

4. **Inspect (TI).**

5. **Secure access door L90** (para 2-2-2).

6. **Perform pilot or CPG edge light operational check** (TM 55-1520-238-T).

END OF TASK

9-6-16. PILOT OR CPG UTILITY LIGHT REMOVAL 9-6-16

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician

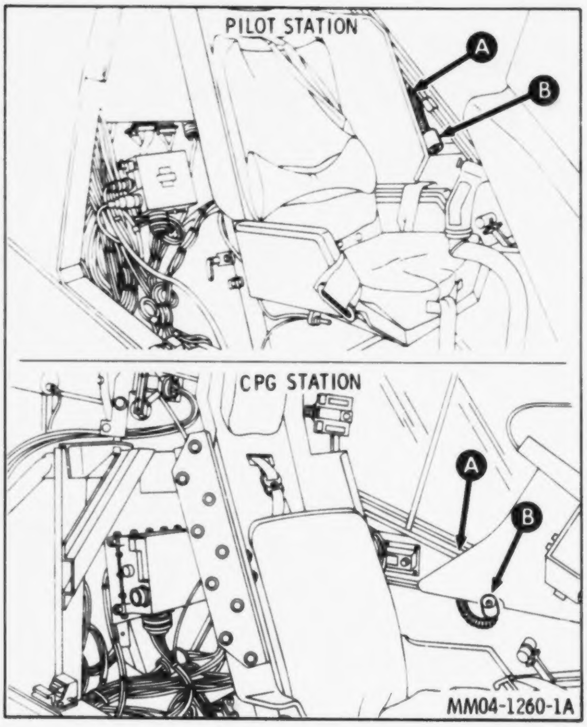
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

NOTE

This task is typical for pilot and CPG lights. Difference is in location only.

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**
2. **Open LT UTIL SEC circuit breaker on pilot center circuit breaker panel.**
3. **Enter CPG station (para 1-7-1). Observe all safety precautions.**
4. **Open EMERG BATT UTIL SEC LT circuit breaker on CPG circuit breaker panel No. 1.**



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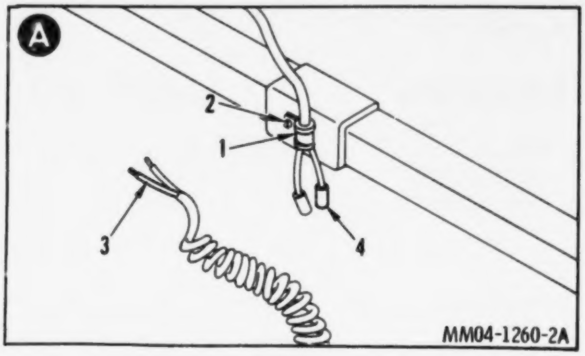
9-6-16. PILOT OR CPG UTILITY LIGHT REMOVAL (cont) 9-6-16

5. **Loosen clamp (1).** Loosen screw (2).

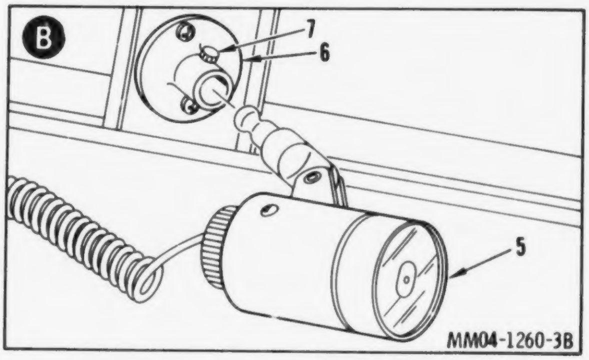
NOTE

Identify each wire and terminal during removal, for proper placement during installation.

6. **Detach wires (3) from splices (4).**


A
2
1
3
4
MM04-1260-2A

7. **Remove utility light (5) from mount (6).** Loosen thumbscrew (7).


B
7
6
5
MM04-1260-3B

END OF TASK

9-6-17. PILOT OR CPG UTILITY LIGHT INSTALLATION 9-6-17

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

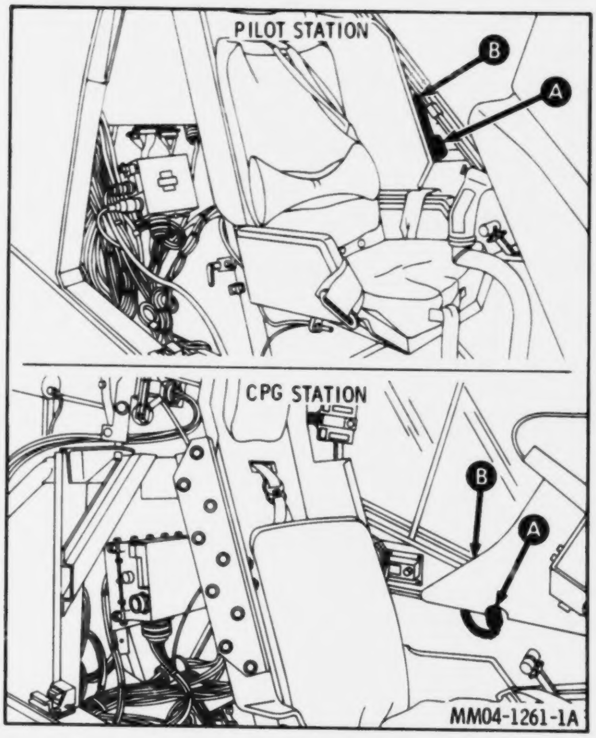
Ref	Condition
1-7-2	Helicopter safed

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

2. **Enter CPG station (para 1-7-1). Observe all safety precautions.**

NOTE

This task is typical for pilot and CPG lights. The difference is in location only.



9-6-17. PILOT OR CPG UTILITY LIGHT INSTALLATION (cont) 9-6-17

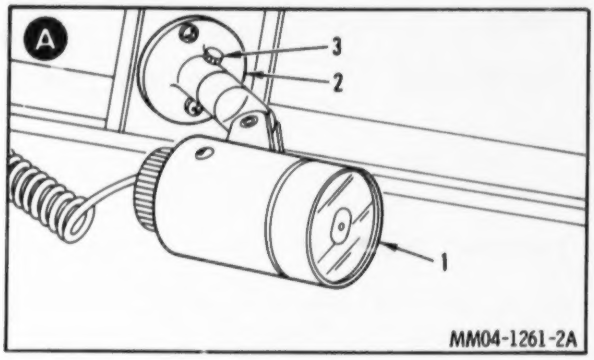
3. **Insert utility light (1) into mount (2).** Tighten thumbscrew (3).

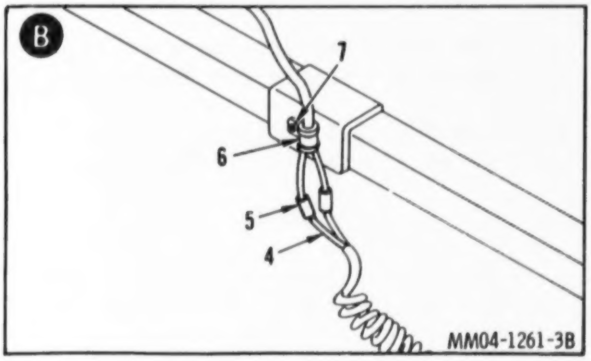
4. **Attach identified wires (4) to splices (5).**

5. **Tighten clamp (6).** Tighten screw (7).

6. **Inspect (TI).**

7. **Perform pilot or CPG utility and secondary lights operational check** (TM 55-1520-238-T).


A
3
2
1
MM04-1261-2A


B
7
6
5
4
MM04-1261-3B

END OF TASK

9-6-18. PILOT OR CPG INSTRUMENT GLARESHIELD LIGHT REMOVAL/INSTALLATION 9-6-18

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**

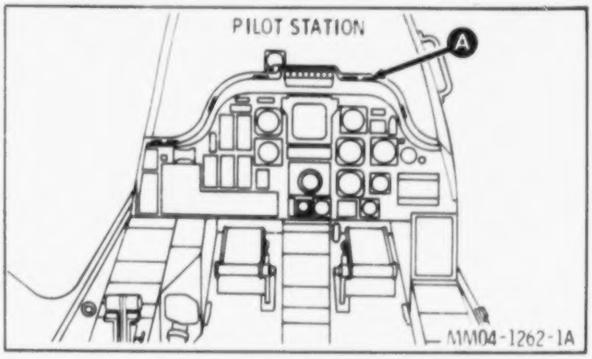
2. **Open LT UTIL SEC circuit breaker on pilot center circuit breaker panel.**

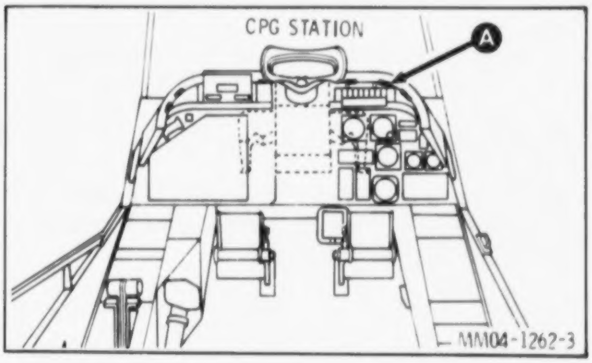
3. **Enter CPG station** (para 1-7-1). **Observe all safety precautions.**

4. **Open EMERG BATT UTIL SEC LT circuit breaker on CPG No. 1 circuit breaker panel.**

NOTE

This task is typical for all instrument glareshield lights.





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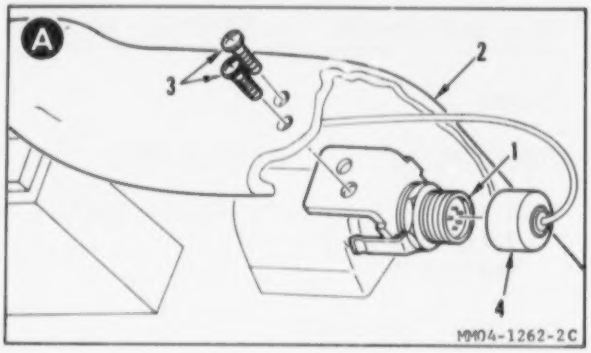
9-6-18. PILOT OR CPG INSTRUMENT GLARESHIELD LIGHT REMOVAL/INSTALLATION (cont) 9-6-18

5. Identify light to be removed.

6. Remove light (1) from glareshield (2). Remove two screws (3).

7. Unscrew end cap and wire (4) from floodlight (1).



B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

Check mounting area of floodlight for cracks, nicks, or dents. No cracks allowed, nicks and dents touch up.

D. INSTALLATION

1. Screw end cap and wire (4) on light (1).

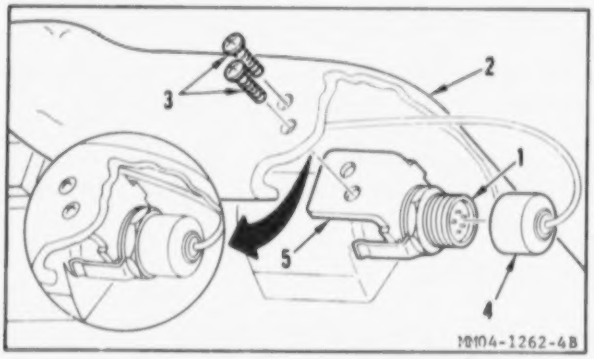
2. Install light (1) on glareshield (2).

   a. Position bracket (5) on glareshield (2).

   b. Install two screws (3) through glareshield (2) and bracket (5).

3. Inspect (TI).

4. Perform pilot or CPG utility and secondary lights operational check (TM 55-1520-238-T).



END OF TASK

9-6-19. PILOT OR CPG INSTRUMENT GLARESHIELD LAMP REPLACEMENT 9-6-19

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

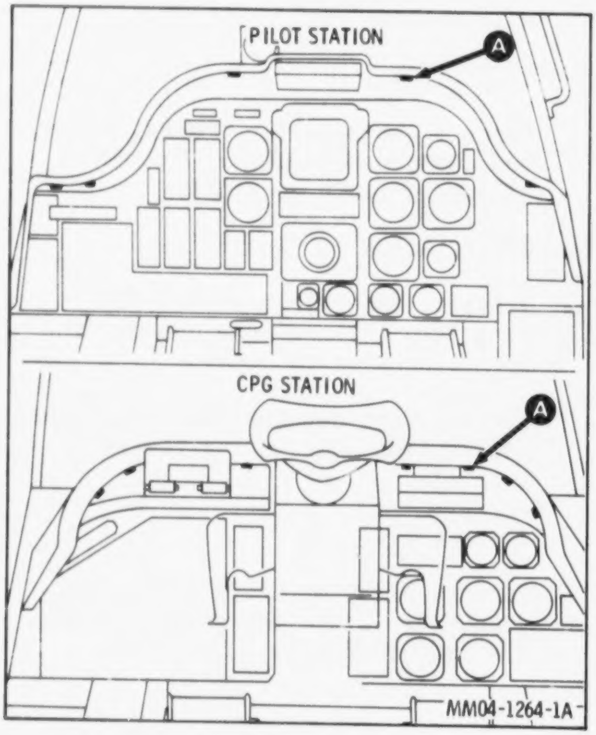
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.
2. Open LT UTIL SEC circuit breaker on pilot center circuit breaker panel.
3. Enter CPG station (para 1-7-1). Observe all safety precautions.
4. Open EMERG BATT UTIL SEC LT circuit breaker on CPG No. 1 circuit breaker panel.



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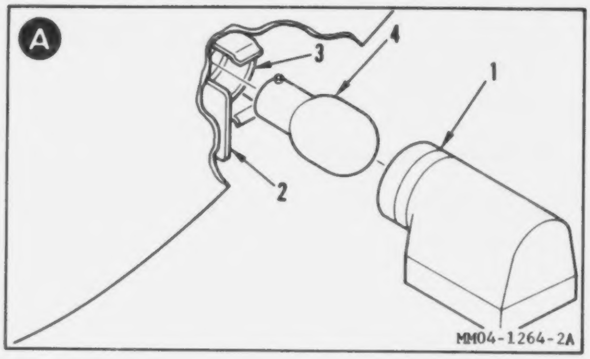
9-6-19. PILOT OR CPG INSTRUMENT GLARESHIELD LAMP REPLACEMENT (cont) 9-6-19

NOTE

This task is typical for all lamps in the pilot and CPG glareshield lights.

5. **Remove lens cap housing (1) from lamp base (2).** Slide housing (1) away from socket (3).

6. **Remove lamp (4) from socket (3).** Push lamp (4) and turn one-quarter turn counterclockwise to unlock.



MM04-1264-2A

B. CLEANING

Wipe all removed and attaching parts with a clean rag.

C. INSPECTION

Check light base for cracks, nicks, and damaged connector. No cracks allowed. Touch up nicks.

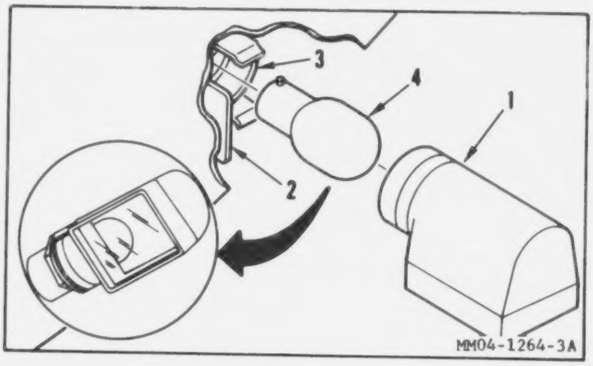
D. INSTALLATION

1. **Install lamp (4) in socket (3).** Push lamp (4) and turn one-quarter turn clockwise to lock.

2. **Install lens cap housing (1) on base (2).** Slide housing (1) toward base (2).

3. **Inspect (TI).**

4. **Perform pilot or CPG utility and secondary lights operational check** (TM 55-1520-238-T).



MM04-1264-3A

END OF TASK

9-6-20. PILOT EXT LT/INTR LT PANEL SEMICONDUCTOR DEVICE REPLACEMENT (AVIM) 9-6-20

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Soldering Iron, Electric	3439-00-853-8760

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

Materials/Parts:

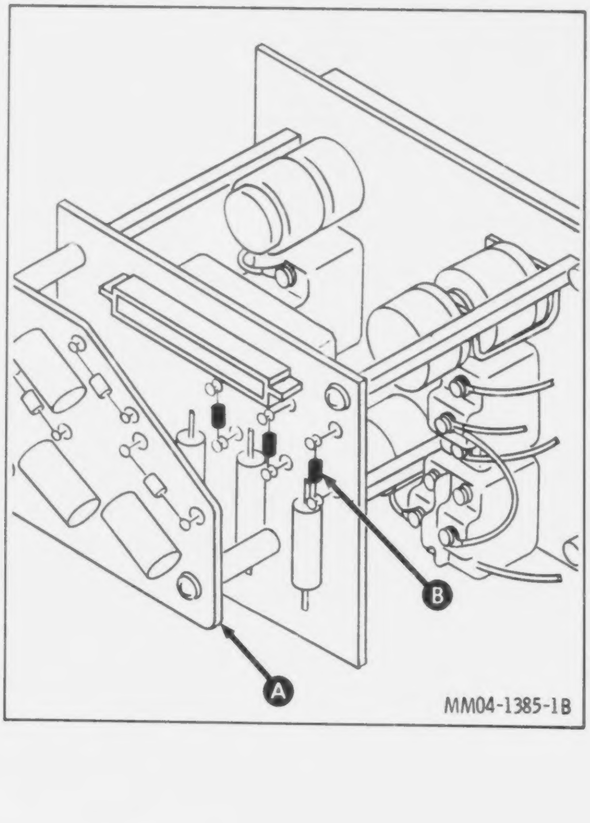
(E50) Solder

References:

TM 55-1500-323-24

NOTE

This task is typical for all semiconductors.



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9-6-20. PILOT EXT LT/INTR LT PANEL SEMICONDUCTOR DEVICE REPLACEMENT (AVIM) (cont) 9-6-20

A. REMOVAL

1. **Remove component board A2 (1) from pilot EXT LT/INTR LT panel (2).**
   a. Remove three screws (3) and three washers (4).
   b. Remove board (1) and three spacers (5).

WARNING

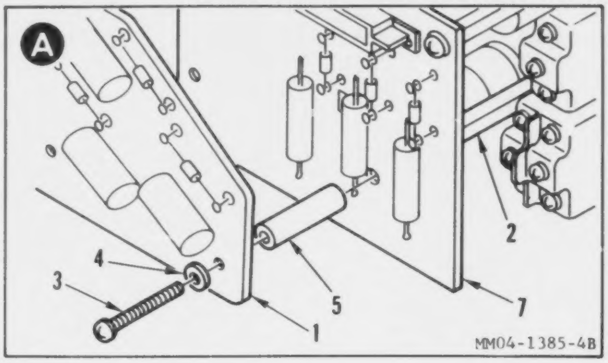
Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

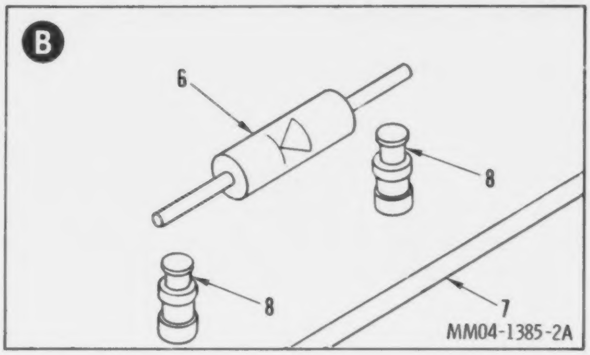
2. **Remove semiconductor (6) from component board A1 (7).**
   a. Identify direction of semiconductor (6).
   b. Desolder semiconductor (6) from two terminals (8). Use soldering iron (TM 55-1500-323-24).

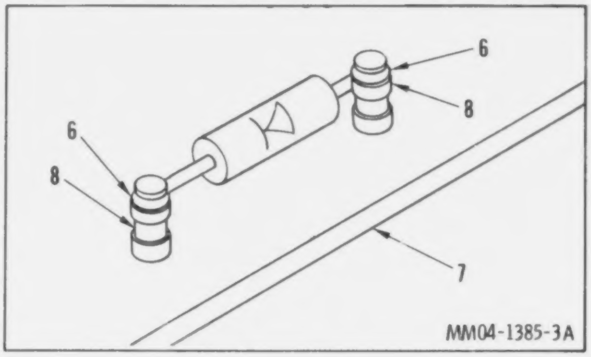
B. INSTALLATION

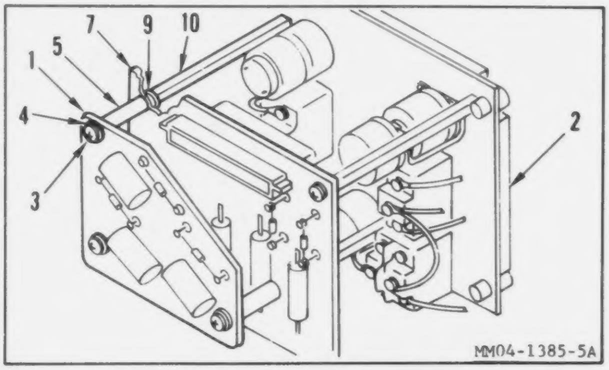
1. **Install semiconductor (6) on board A1 (7).**
   a. Install semiconductor (6) in direction previously identified.
   b. Solder semiconductor (6) to two terminals (8). Use soldering iron and solder (E50) (TM 55-1500-323-24).
2. **Install board A2 (1) on panel (2).**
   a. Position spacers (5) on board A1 (7).
   b. Position board A2 (1) on spacers (5).
   c. Install three screws (3) through washers (4), board (1), spacers (5), board (7), lock washer (9), and support post (10).
3. **Inspect (TI).**

END OF TASK









9-6-21. PILOT EXT LT/INTR LT PANEL RESISTOR REPLACEMENT (AVIM) 9-6-21

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Soldering Iron, Electric	3439-00-853-8760

Materials/Parts:

(E50) Solder

Personnel Required:

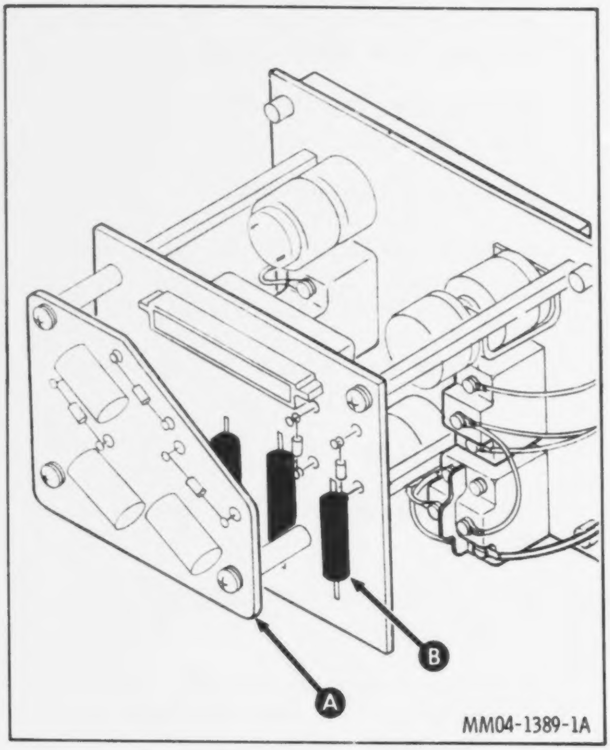
68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1500-323-24

NOTE

This task is typical for all EXT LT/INTR resistors.



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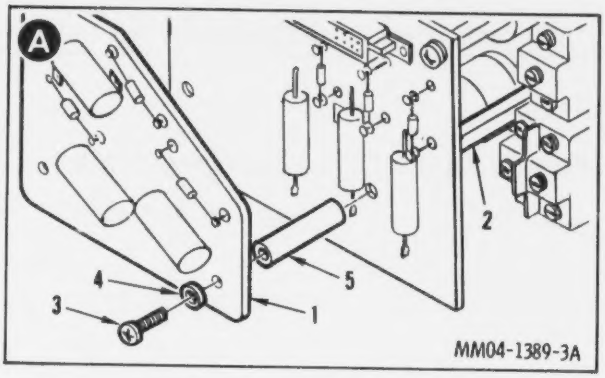
9-6-21. PILOT EXT LT/INTR LT PANEL RESISTOR REPLACEMENT (AVIM) (cont) 9-6-21

A. REMOVAL

1. **Remove component board A2 (1) from pilots EXT LT/INTR LT panel (2).**

   a. Remove three screws (3) and washers (4).

   b. Remove board (1) and three spacers (5).



WARNING

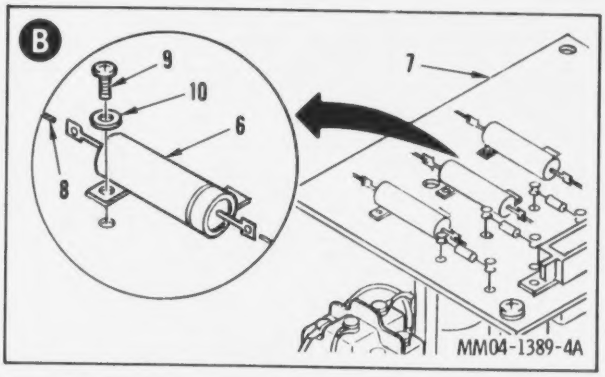
Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

2. **Remove resistor (6) from component board A1 (7).**

   a. Identify wires (8).

   b. Desolder wires (8) from resistor (6). Use soldering iron (TM 55-1500-323-24).

   c. Remove two screws (9) and two washers (10).



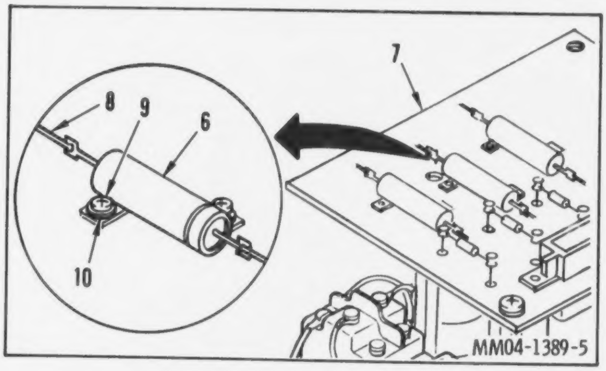
B. INSTALLATION

1. **Install resistor (6) on board A1 (7).**

   a. Position resistor (6) on board (7).

   b. Install two screws (9), through washers (10), and resistor (6) into board (7).

   c. Solder wires (8) according to markings to resistor (6). Use soldering iron and solder (E50) (TM 55-1500-323-24).



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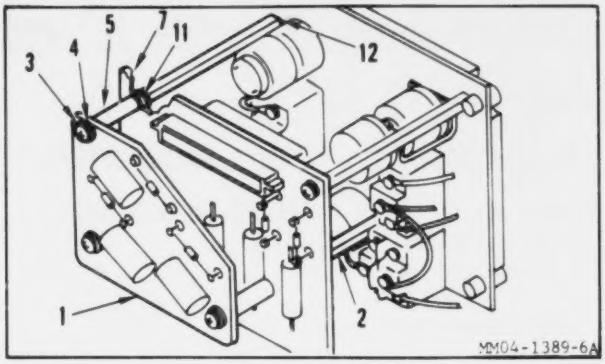
9-6-21. PILOT EXT LT/INTR LT PANEL RESISTOR REPLACEMENT (AVIM) (cont) 9-6-21

2. **Install board A2 (1) on panel (2).**
   a. Position spacers (5) on board A1 (7).
   b. Position board A2 (1) on spacers (5).
   c. Install three screws (3) through washers (4), board (1), spacers (5), board (7), lock washer (11), and support post (12).



3. **Inspect (TI).**

END OF TASK

9-6-22. PILOT EXT LT/INTR LT PANEL SWITCH REPLACEMENT (AVIM) 9-6-22

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

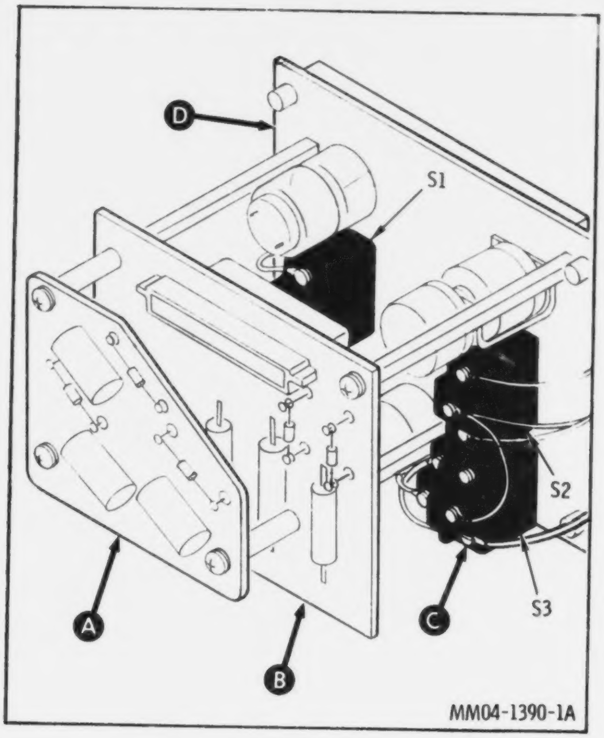
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9-6-28	Pilot EXT LT/INTR LT edge lighted panel removed

NOTE

This task is typical for all EXT LT/INTR LT panel switches.



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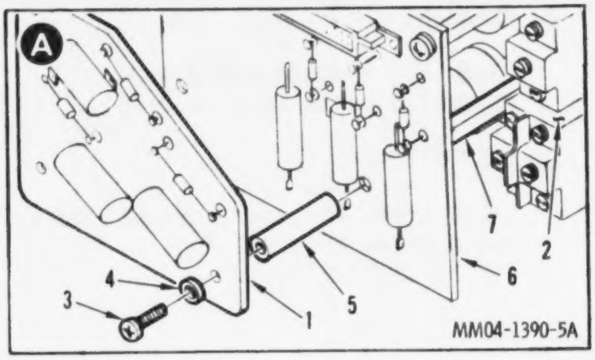
9-6-22. PILOT EXT LT/INTR LT PANEL SWITCH REPLACEMENT (AVIM) (cont) 9-6-22

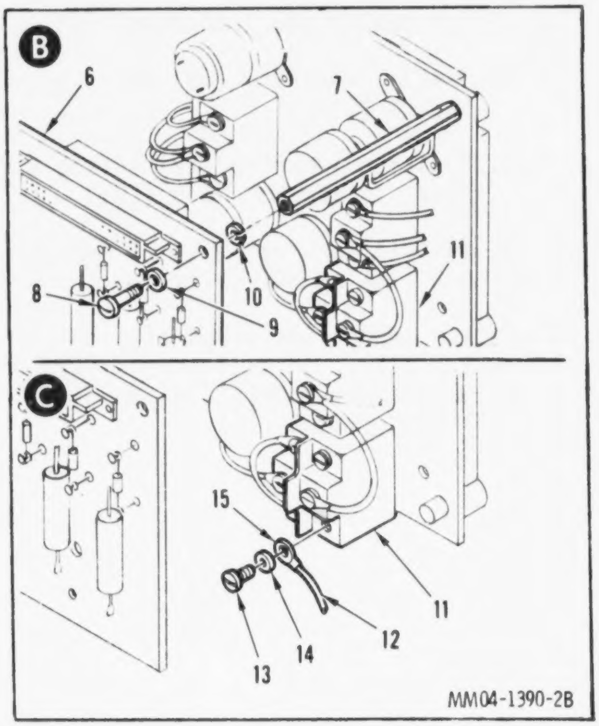
A. REMOVAL


A
7
2
6
5
4
3
1
MM04-1390-5A

1. **Remove component board A2 (1) from pilot EXT LT/INTR LT panel (2).**

   a. Remove three screws (3) and three washers (4).

   b. Remove board (1) and three spacers (5).


B
6
7
11
8
10
9
C
15
11
12
14
13
MM04-1390-2B

2. **Remove component board A1 (6) from four standoff posts (7).**

   a. Remove four screws (8), washers (9), and lock washers (10) from four posts (7).

   b. Position board (6) to gain access to switch (11).

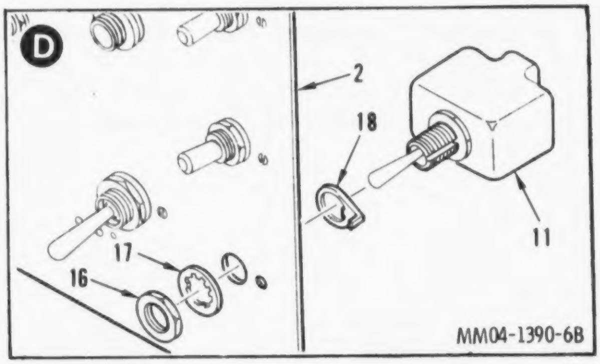
NOTE

Identify each wire and terminal during removal, for proper placement during installation.

3. **Detach wires (12) from switch (11).**

   a. Identify wires (12).

   b. Remove screws (13), lock washers (14), and terminal lugs (15).


D
2
18
11
17
16
MM04-1390-6B

4. **Remove switch (11) from panel (2).**

   a. Remove nut (16), and lock washer (17).

   b. Remove switch (11) and lockring (18) from panel (2).

GO TO NEXT PAGE

9-6-22. PILOT EXT LT/INTR LT PANEL SWITCH REPLACEMENT (AVIM) (cont) 9-6-22

B. CLEANING

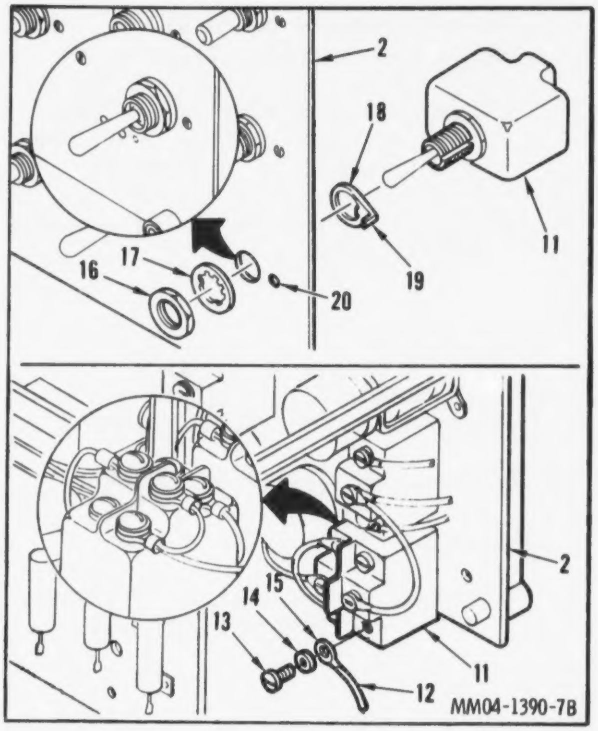
Clean all removed parts and attaching parts (para 1-5-36).

C. INSPECTION

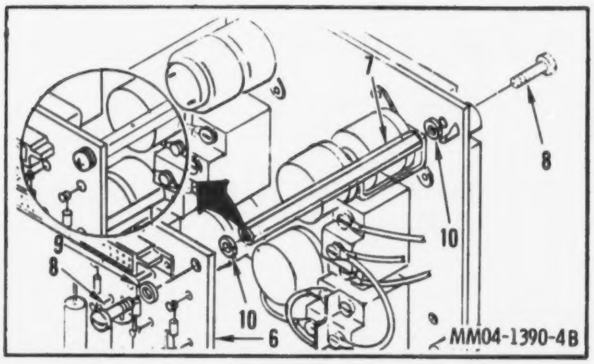
Check wires for wear, cracks, cuts, and damaged terminal lugs (TM 55-1500-323-24).

D. INSTALLATION

1. Insert switch (6) into panel (2).
   a. Install lockring (18) on switch (6).
   b. Position lockring (18) so tab (19) seats in locator hole (20).
   c. Install lock washer (17) and nut (16) on switch (11).
2. Attach identified wires (12) on switch (11). Install screws (13) through lock washers (14) and lugs (15) into switch (11).



3. Install component board A1 (6) on standoffs (7). Install two screws (8), lock washers (9), board (6), and lock washer (10) into support post (7).



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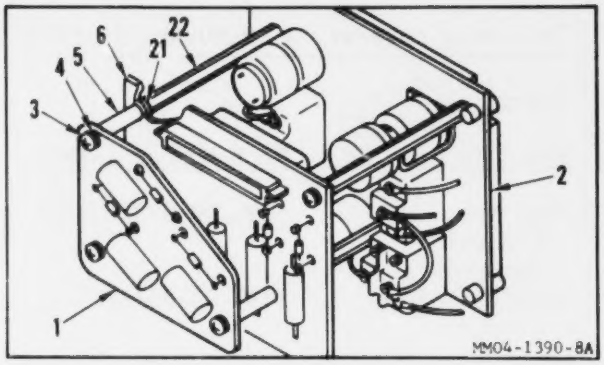
9-6-22. PILOT EXT LT/INTR LT PANEL SWITCH REPLACEMENT (AVIM) (cont) 9-6-22



4. **Install board A2 (1) on panel (2).**

   a. Position three spacers (5) on component board A1 (6).

   b. Position board A2 (1) on spacers (5).

   c. Install three screws (3), through three washers (4) board (1), three spacers (5), board (6), lock washer (21) and support post (22).

5. **Install pilot EXT LT/INTR LT edge lighted panel** (para 9-6-28).

6. **Install pilot EXT LT/INTR LT panel control knobs** (para 9-6-27).

7. **Inspect (TI).**

END OF TASK

9-6-23. PILOT EXT LT/INTR LT PANEL FORM VARIABLE RESISTOR REPLACEMENT (AVIM) 9-6-23

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Soldering Iron, Electric	3439-00-853-8760

Materials/Parts:

(E50) Solder

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1500-323-24

Equipment Conditions:

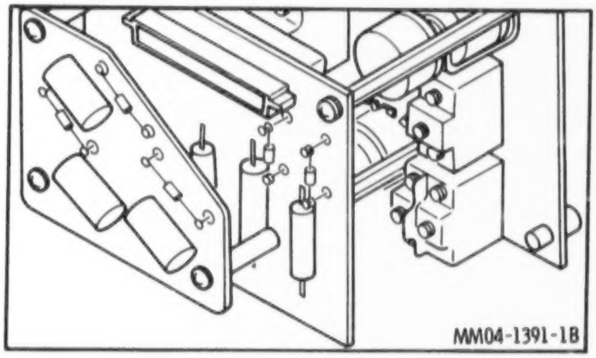
Ref	Condition
9-6-28	Pilot EXT LT/INTR LT edge lighted panel removed

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

NOTE

Identify each wire and terminal during removal, for proper placement during installation.

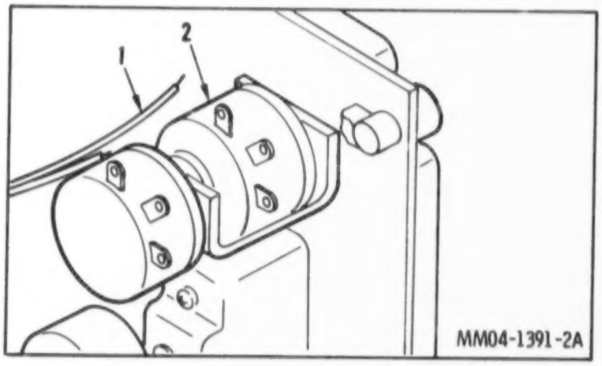

MM04-1391-1B

A. REMOVAL

1. **Remove wires (1) from resistor (R4) (2).**

   a. Identify wires (1).

   b. Desolder wires (1). Use soldering iron (TM 55-1500-323-24).



MM04-1391-2A

GO TO NEXT PAGE

9-6-23. PILOT EXT LT/INTR LT PANEL FORM VARIABLE RESISTOR REPLACEMENT (AVIM) (cont) 9-6-23

2. **Remove resistor (2) from pilot EXT LT/INTR LT panel (3).** Remove nut (4) and lock washer (5).

B. CLEANING

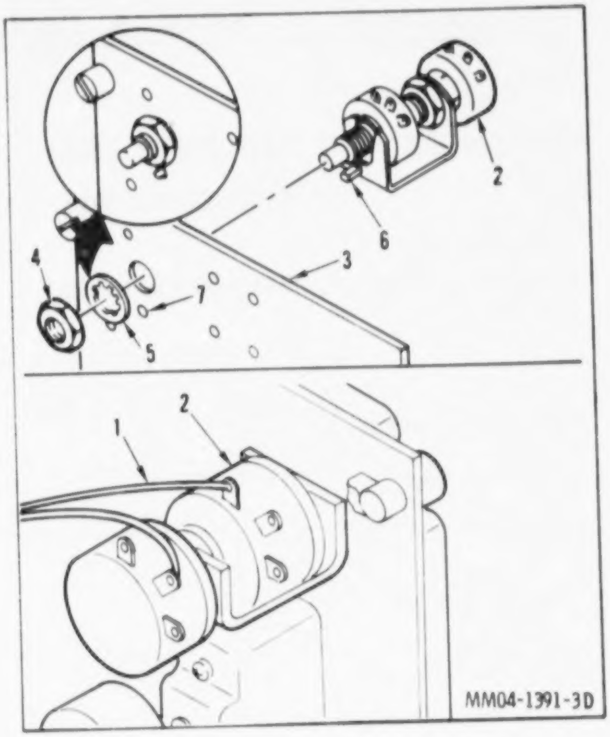
Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

Check wires for cuts, cracks, and damaged connections (TM 55-1500-323-24).

D. INSTALLATION

1. **Install resistor (2) in panel (3).**
   a. Position resistor (2) so tab (6) seats in locator hole (7).
   b. Install lock washer (5) and nut (4).



WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

2. **Attach wires (1) to resistor (2).** Solder identified wires (1). Use soldering iron and solder (E50) (TM 55-1500-323-24).
3. **Install pilot EXT LT/INTR LT edge lighted panel** (para 9-6-28).
4. **Inspect (TI).**

END OF TASK

9-6-24. PILOT EXT LT/INTR LT PANEL R/CTR CSL ATTENUATOR REPLACEMENT (AVIM) 9-6-24

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Soldering Iron, Electric	3439-00-853-8760

Materials/Parts:

(E50) Solder

Personnel Required:

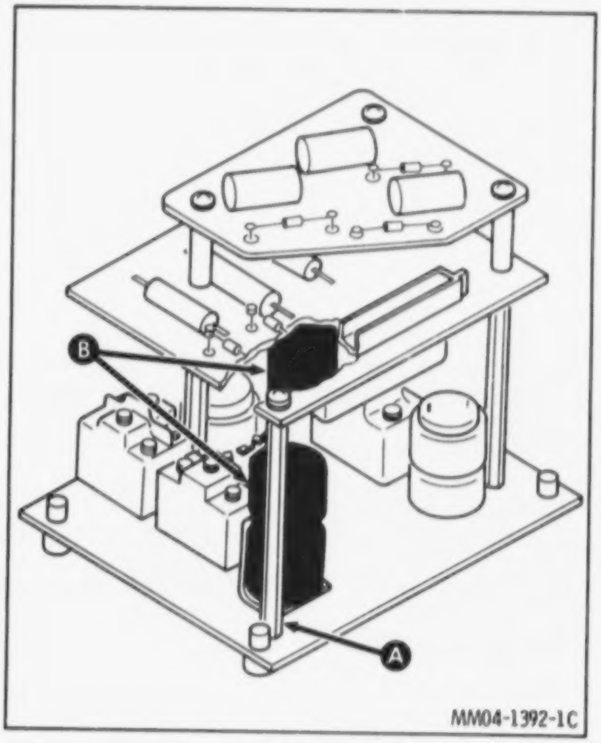
68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9-6-28	Pilot EXT LT/INTR LT edge lighted panel removed



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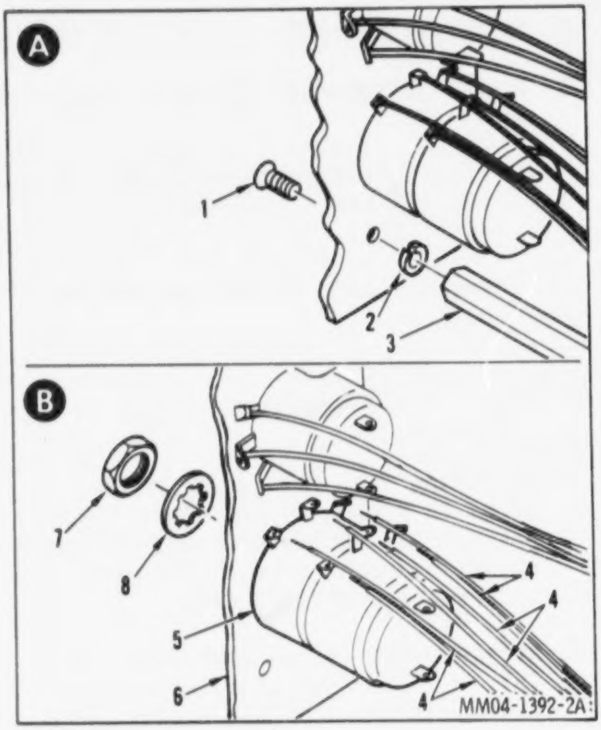
9-6-24. PILOT EXT LT/INTR LT PANEL R/CTR CSL ATTENUATOR REPLACEMENT (AVIM) (cont)



A. REMOVAL

1. Remove four screws (1) and washers (2) from four standoffs (3).

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

NOTE

Identify each wire and terminal during removal for proper placement during installation.

2. Detach wires (4) from attenuator (5).
   a. Position standoff (3) so wires (4) are accessible.
   b. Identify wires (4) on attenuator (5).
   c. Desolder wires (4). Use soldering iron (TM 55-1500-323-24).
3. Remove attenuator (5) from EXT LT/INTR LT panel (6). Remove nut (7) and lock washer (8).

B. CLEANING

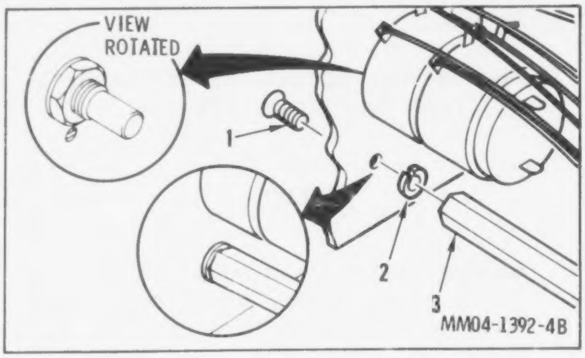
Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

Check wires for wear, cracks, cuts, and damaged connections (TM 55-1500-323-24).

GO TO NEXT PAGE

9-6-24. PILOT EXT LT/INTR LT PANEL R/CTR CSL ATTENUATOR REPLACEMENT (AVIM) (cont) 9-6-24



D. INSTALLATION

1. Install attenuator (5) on panel (6).
   a. Position attenuator (5) so tab (9) seats in locator hole (10).
   b. Install lock washer (8) and nut (7).

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

2. Attach wires (4) to attenuator R2 (5). Solder identified wires (4). Use soldering iron and solder (E50) (TM 55-1500-323-24).
3. Install four lock washers (2) and screws (1) on four standoffs (3).
4. Install pilot EXT LT/INTR LT edge lighted panel (para 9-6-28).
5. Inspect (TI).

END OF TASK

9-6-25. PILOT EXT LT/INTR LT PANEL L/CSL VARIABLE RESISTOR REPLACEMENT (AVIM) 9-6-25

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Soldering Iron, Electric	3439-00-853-8760

Materials/Parts:

(E50) Solder

Personnel Required:

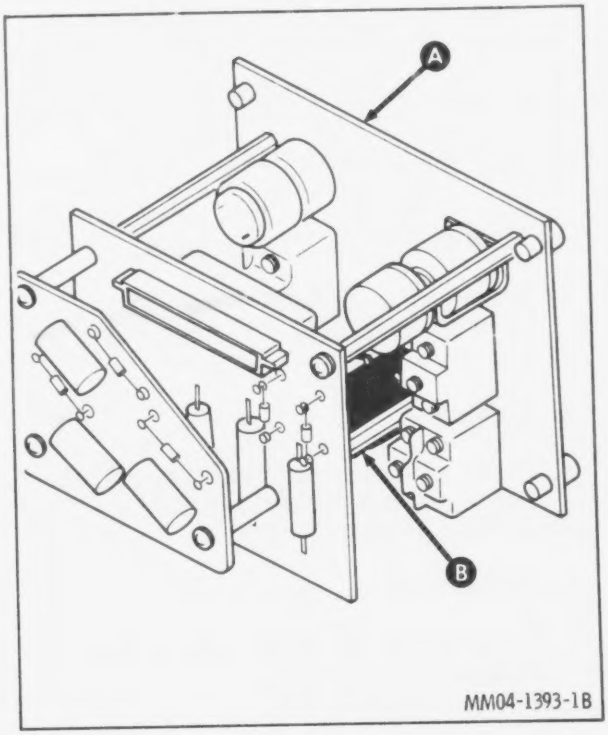
68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9-6-28	Pilot EXT LT/INTR LT edge lighted panel removed



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9-6-25. PILOT EXT LT/INTR LT PANEL L/CSL VARIABLE RESISTOR REPLACEMENT (AVIM) (cont) 9-6-25

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

NOTE

Identify each wire and terminal during removal, for proper placement during installation.

A. REMOVAL

1. Remove four screws (1) and four washers (2) from four connector standoffs (3).

2. Detach wires (4) from resistor (5).

   a. Identify wires (4).

   b. Desolder wires (4). Use soldering iron (TM 55-1500-323-24).

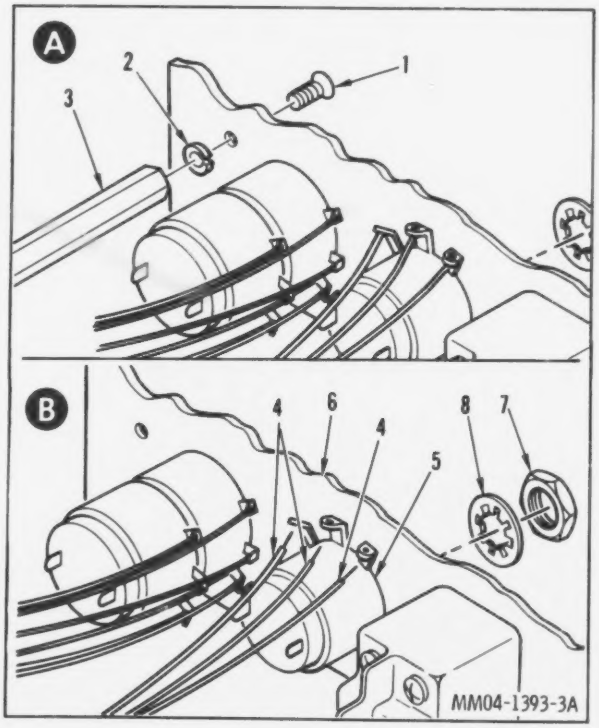
3. Remove resistor (5) from EXT LT/INTR LT panel (6). Remove nut (7) and lock washer (8).

B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

Check wires for wear, cuts, and damaged connections (TM 55-1500-323-24).



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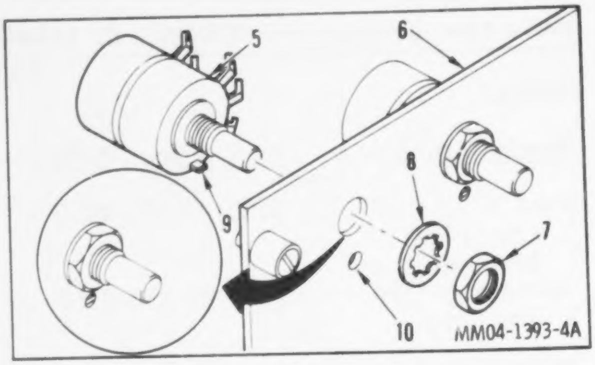
9-6-25. PILOT EXT LT/INTR LT PANEL L/CSL VARIABLE RESISTOR REPLACEMENT (AVIM) (cont)

D. INSTALLATION

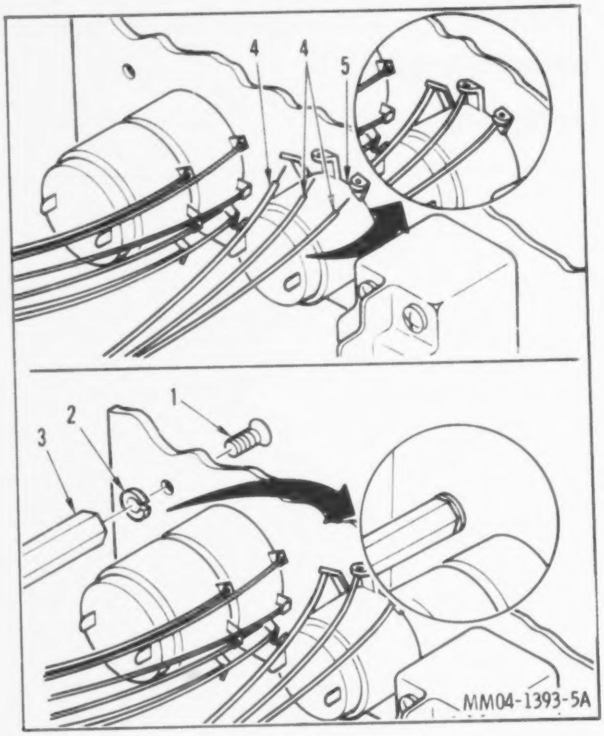
1. **Install resistor (5) in panel (6).**
    - a. Position resistor (5) so tab (9) seats in locator hole (10).
    - b. Install lock washer (8) and nut (7).



WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

2. **Attach wires (4) to resistor (5).** Solder three identified wires (4). Use soldering iron and solder (E50) (TM 55-1500-323-24).
3. **Install four washers (2) and screws (1) on four standoffs (3).**
4. **Install pilot EXT LT/INTR LT edge** lighted panel (para 9-6-28).
5. **Inspect (TI).**



END OF TASK

9-6-26. PILOT EXT LT/INTR LT PANEL INST ATTENUATOR REPLACEMENT (AVIM) 9-6-26

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Soldering Iron, Electric	3439-00-853-8760

Materials/Parts:

(E50) Solder

Personnel Required:

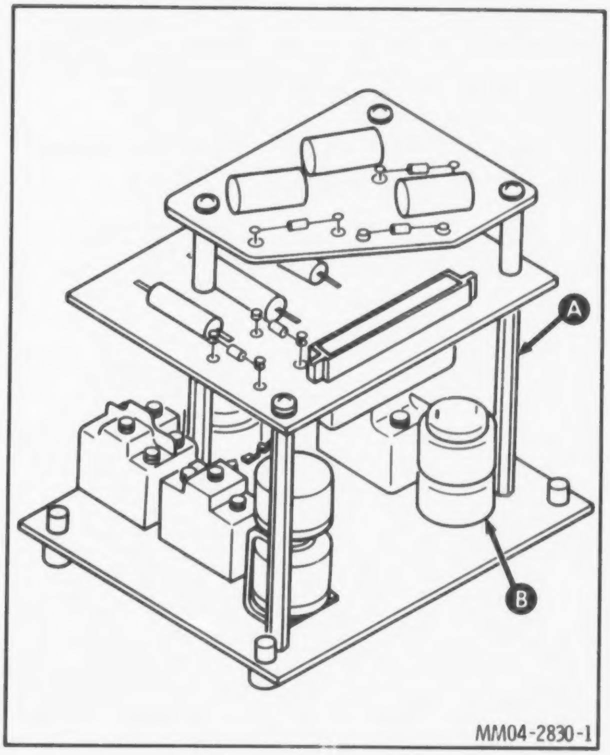
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9-6-28	Pilot EXT LT/INTR LT edge lighted panel removed



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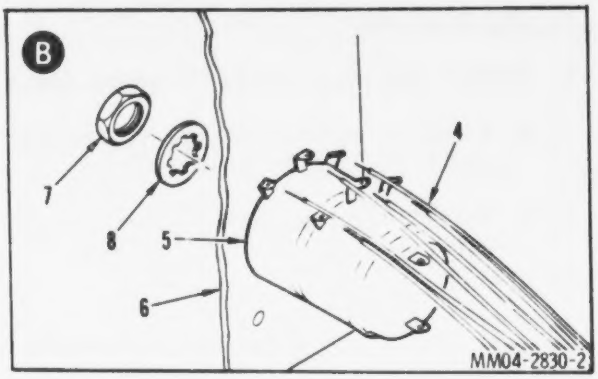
9-6-26. PILOTS EXT LT/INTR LT PANEL INST ATTENUATOR REPLACEMENT (AVIM) (cont) 9-6-26



A. REMOVAL

1. **Remove four screws (1) and washers (2) from four connector standoffs (3).**

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

NOTE

Identify each wire and terminal during removal, for proper placement during installation.

2. **Detach wires (4) from attenuator (5).**
   a. Position standoffs (3) so wires (4) are accessible.
   b. Identify wires (4) on attenuator R1 (5).
   c. Desolder wires (4). Use soldering iron (TM 55-1500-323-24).
3. **Remove attenuator (5) from EXT LT/INTR LT panel (6).** Remove nut (7) and lock washer (8).

B. CLEANING

Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

Check wires for cracks, cuts, and damaged connections (TM 55-1500-323-24).

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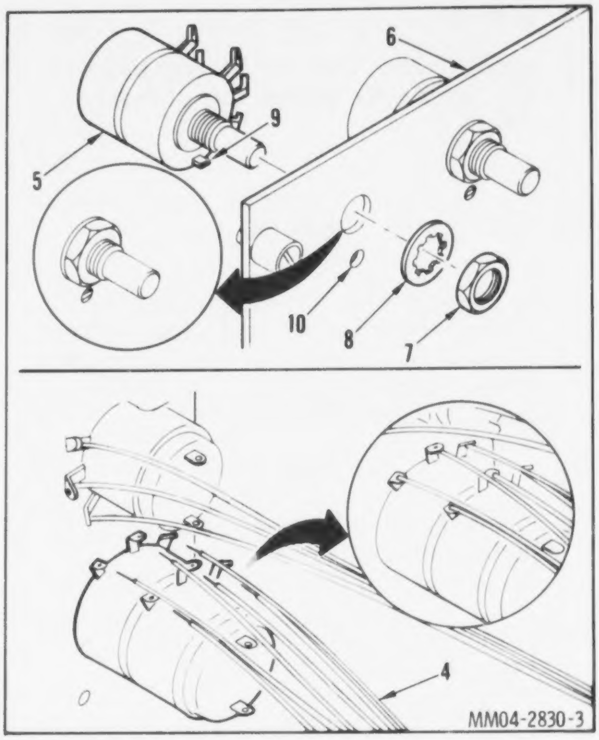
9-6-26. PILOT EXT LT/INTR LT PANEL INST ATTENUATOR REPLACEMENT (AVIM) (cont) 9-6-26

D. INSTALLATION



1. **Install attenuator (5) in panel (6).**

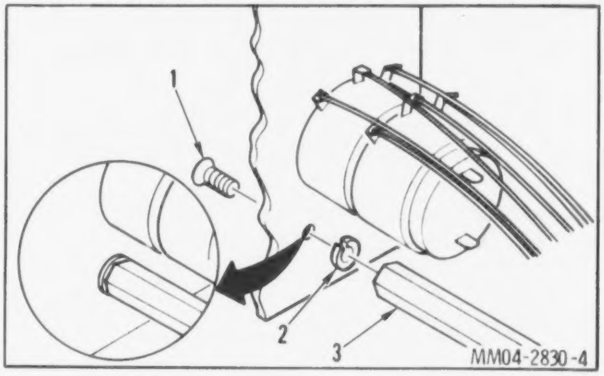
   a. Position attenuator (5) so tab (9) seats in locator hole (10).

   b. Install lock washer (8) and nut (7).

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

2. **Attach wires (4) to attenuator (5).** Solder wires (4) according to markings. Use soldering iron and solder (E50) (TM 55-1500-323-24).



3. **Install four washers (2) and screws (1) on four connector standoffs (3).**

4. **Install pilot EXT LT/INTR LT edge lighted panel** (para 9-6-28).

5. **Inspect (TI).**

END OF TASK

9-6-27. PILOT EXT LT/INTR LT PANEL CONTROL KNOB REPLACEMENT 9-6-27

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Key, Socket Head Screw, 9/64	5120-00-889-2163

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

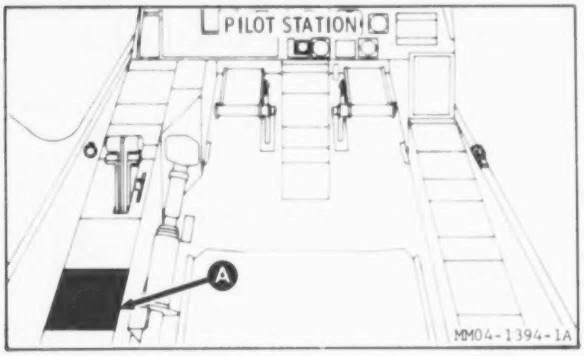
Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

NOTE

This task is typical for all EXT LT/INTR LT panel control knobs.

1. Enter pilot station (para 1-7-1). Observe all safety precautions.
2. Set all switches and controls on Pilot EXT LT/INTR LT panel to OFF.



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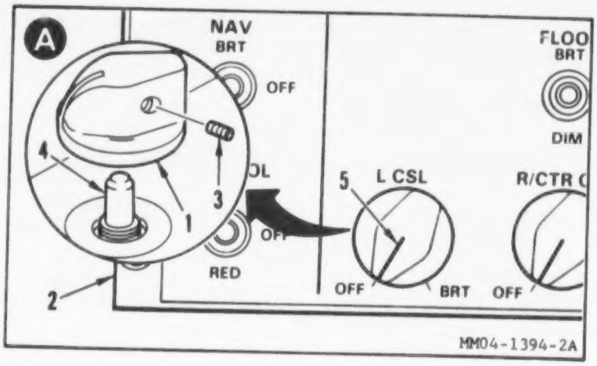
9-6-27. PILOT EXT LT/INTR LT PANEL CONTROL KNOB REPLACEMENT (cont) 9-6-27


A
NAV
BRT
OFF
FLOO
BRT
DIM
4
3
1
OL
OFF
RED
2
5
L CSL
R/CTR C
OFF
BRT
OFF
MM04-1394-2A

3. **Remove control knob (1) from EXT LT/ INTR LT panel (2).** Loosen two setscrews (3).

B. CLEANING

Clean all removed and attaching parts (para 1-5-36).

C. INSPECTION

Check knobs for cracks and damaged threads. No cracks allowed. Thread damage not to exceed 50 percent of one thread.

D. INSTALLATION

1. **Install knob (1) on panel (2).**
   a. Position control knob (1) on shaft (4).
   b. Set control knob pointer (5) to OFF.
   c. Tighten two setscrews (3).
2. **Inspect (TI).**
3. **Perform pilot edge light operational check** (TM 55-1520-238-T).

END OF TASK

9-6-28. PILOT EXT LT/INTR LT EDGE LIGHTED PANEL REPLACEMENT 9-6-28

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T

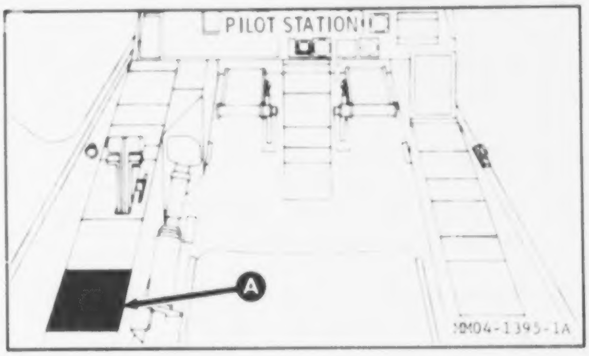
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
9-6-27	Pilot EXT LT/INTR LT panel control knobs removed

A. REMOVAL

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

2. **Open LT PRI circuit breaker on pilot center circuit breaker panel.**



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9-6-28. PILOT EXT LT/INTR LT EDGE LIGHTED PANEL REPLACEMENT (cont) 9-6-28

3. Remove edge lighted panel (1) from EXT LT/INTR LT panel (2). Remove five screws (3).

B. CLEANING

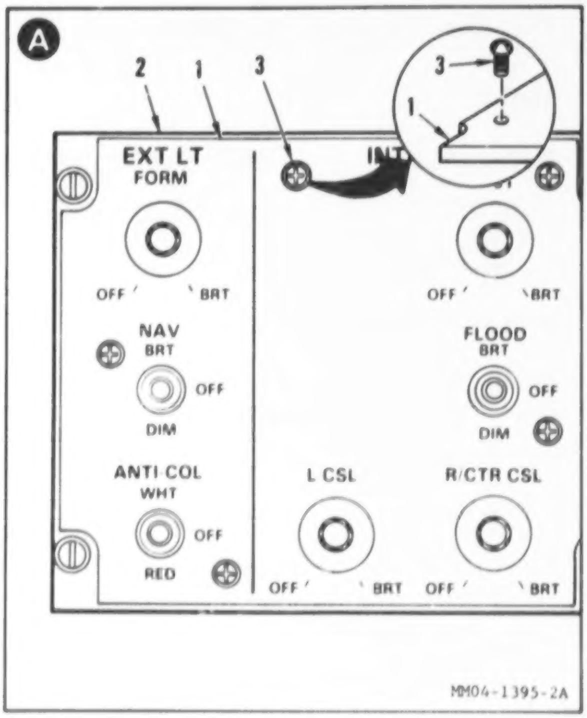
Clean panel and mounting surface (para 1-5-36).

C. INSPECTION

Check panel for chips, cracks, and damaged mounting holes. No cracks allowed. Touchup chips. Replace panel if mounting holes are elongated.

D. INSTALLATION

1. Install panel (1) on panel (2). Install five screws (3).
2. Inspect (TI).
3. Install pilot EXT LT/INTR LT panel control knobs (para 9-6-27).
4. Perform pilot edge light operational check (TM 55-1520-238-T).


A
2
1
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EXT LT
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DIM
ANTI COL
WHT
OFF
RED
L CSL
R/CTR CSL
OFF
BRT
OFF
BRT
MM04-1395-2A

END OF TASK

9-6-29. MULTICHANNEL DIMMING CONTROLLER MODULE REMOVAL/INSTALLATION (AVIM) 9-6-29

This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Materials/Parts:

(E32) Cloth, Lint-Free

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

CAUTION

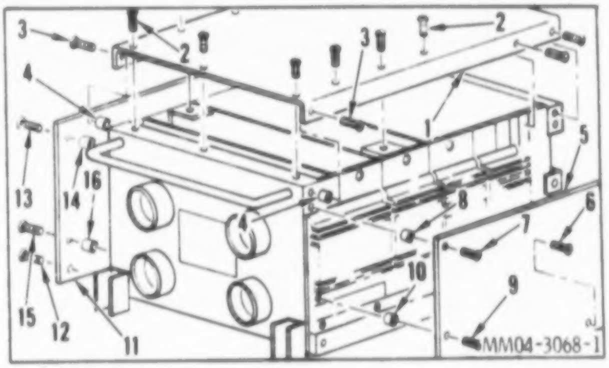
To prevent electrostatic damage to circuit cards, ensure that modules are removed only on a static-free work station.

NOTE

This task is typical for module channels 1,1A, 2,2A; 3,3A; 4,4A, or advisory module removal.

A. REMOVAL

1. Remove top cover (1) by removing 25 screws (2), 2 screws (3), and 2 spacers (4).
2. Remove left heat sink cover (5) by removing seven screws (6), one screw (7), one spacer (8), one screw (9), and one small spacer (10).
3. Remove right heat sink cover (11) by removing seven screws (12), one screw (13), one spacer (14), one screw (15), and one small spacer (16).



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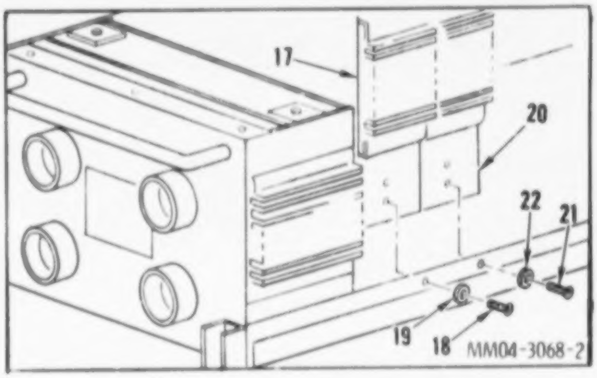
9-6-29. MULTICHANNEL DIMMING CONTROLLER MODULE REMOVAL/ INSTALLATION (AVIM) (cont) 9-6-29

4. **Remove module 1,1A (17).**
   a. Remove two screws (18) and washers (19).
   b. Lift module 1,1A (17) to remove.

5. **Remove module 2,2A (20).**
   a. Remove two screws (21) and washers (22).
   b. Lift module 2,2A (20) to remove.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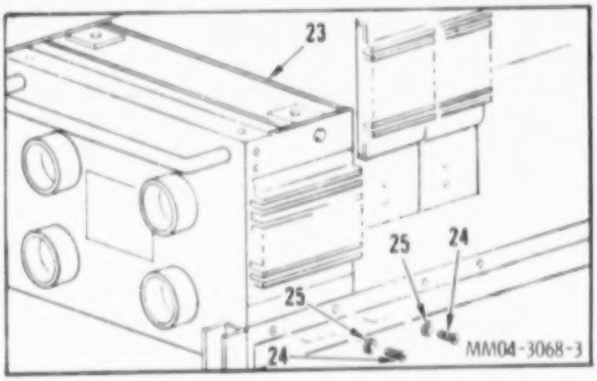
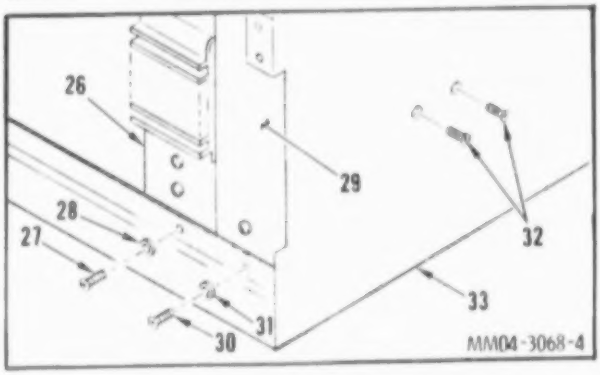
MM04-3068-2

6. **Remove module 4,4A (23).**
   a. Remove four screws (24) and washers (25).
   b. Lift module 4,4A (23) to remove.


23
25
24
25
24
MM04-3068-3

7. **Remove module 3,3A (26).**
   a. Remove two screws (27) and washers (28).
   b. Lift module 3,3A (26) to remove.

8. **Remove advisory module (29).**
   a. Remove two screws (30) and washers (31) from sides.
   b. Remove two screws (32) from rear cover (33).
   c. Lift module (29) forward from rear cover (33) to remove.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MM04-3068-4

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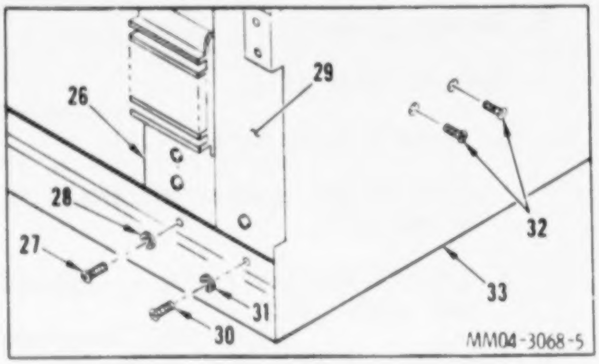
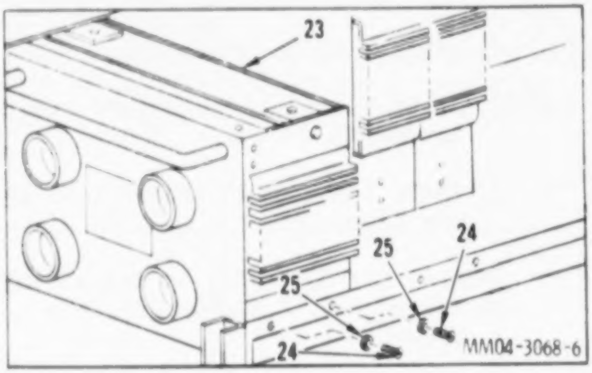
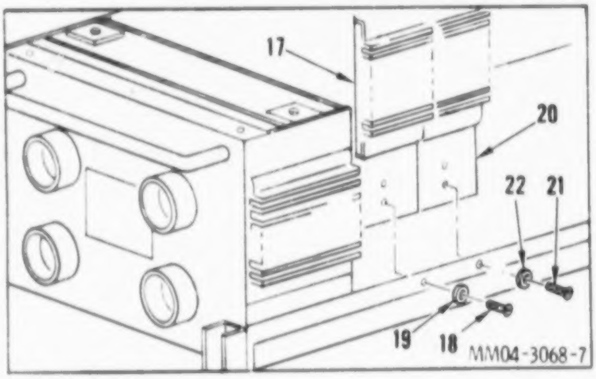
9-6-29. MULTICHANNEL DIMMING CONTROLLER MODULE REMOVAL/INSTALLATION (AVIM) (cont) 9-6-29







B. CLEANING

Clean **mounting** area. Use lint-free cloth (E32).

C. INSTALLATION

NOTE

Ensure that insulator/spacer pads are placed between circuit cards.

1. **Install module (29).**
   a. Aline and press advisory module (29) until seated.
   b. Install two washers (31) and screws (30) in sides.
   c. Install two screws (32) in rear cover (33).
2. **Install module 3,3A (26).**
   a. Aline and press module 3,3A (26) until seated.
   b. Install two washers(28) and screws (27) in sides.
3. **Install module 4,4A (23).**
   a. Aline and press module 4,4A (23) until seated.
   b. Install four screws (24) and four washers (25) in sides.
4. **Install module 2,2A (20).**
   a. Aline and press module 2,2A (20) until seated.
   b. Install two washers (22) and scarews (21) in sides.
5. **Install module 1,1A (17).**
   a. Aline and press module 1,1A (17) until seated.
   b. Install two washers (19) and scarews (18) in sides.

GO TO NEXT PAGE

9-6-29. MULTICHANNEL DIMMING CONTROLLER MODULE REMOVAL/INSTALLATION (AVIM) (cont) 9-6-29

6. Inspect (TI).

7. Install cover (11).

   a. Install seven screws (12).

   b. Install one spacer (14) and one screw (13).

   c. Install one small spacer (16) and one screw (15).

8. Install left heat sink cover (5).

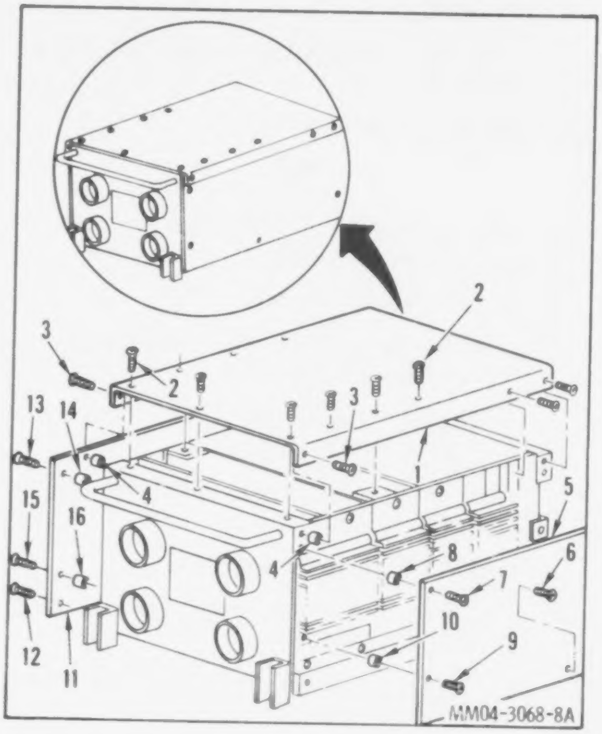
   a. Install seven screws (6).

   b. Install one spacer (8) and one screw (7).

   c. Install one small spacer (10) and one screw (9).

9. Install top cover (1) by installing 25 screws (2), 2 screws (3), and 2 spacers (4).

10. Inspect (TI).



END OF TASK

9-6-30. MOTIONAL TRANSDUCER REMOVAL/INSTALLATION 9-6-30

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

(E8) Lockwire

Personnel REquired:

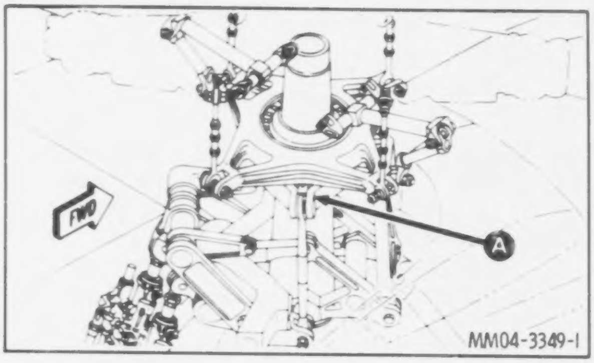
67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors T250L, T250R, T290L, T290R, and L325 opened

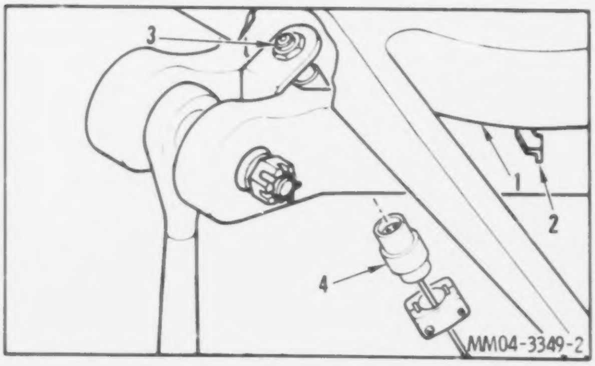


A. REMOVAL

1. Turn rotating swashplate (1) so one interrupter (2) is positioned approximately 45 degrees on each side of transducer (3).

2. Remove lockwire.

3. Detach connector P57 (4) from transducer MT32 (3).



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9-6-30. MOTIONAL TRANSDUCER REMOVAL/INSTALLATION (cont)

4. Remove upper locknut (5). Hold lower locknut (6). Remove upper locknut (5).

5. Remove transducer (3) from bracket (7).

B. CLEANING

Wipe transducer and mounting bracket with a clean dry rag.

C. INSPECTION

1. Check mounting bracket for cracks. None allowed.

2. Check transducer for cracks. None allowed.

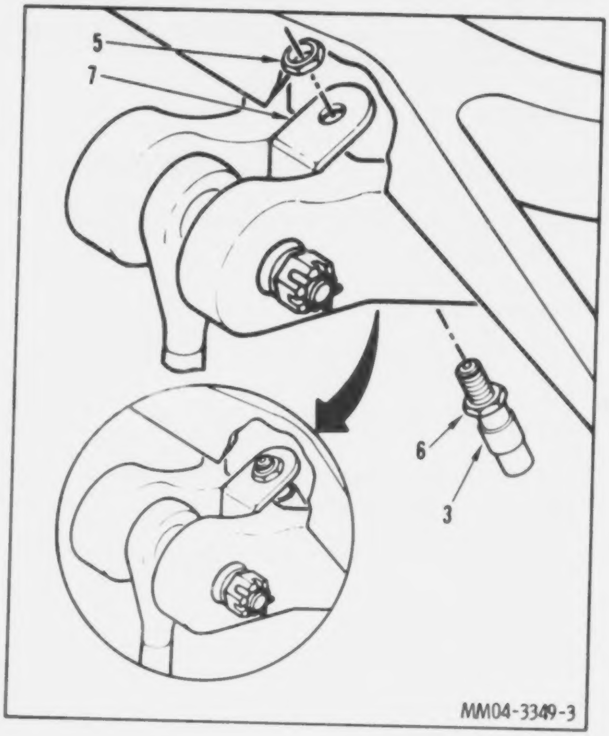
3. Check connector for cuts or loose wires (TM 55-1500-323-24).

D. INSTALLATION

1. Thread lower locknut (6) on transducer (3) approximately 3/8 inch.

2. Insert transducer (3) through bracket (7) with electrical connection pointing down.

3. Install locknut (5) on transducer (3).



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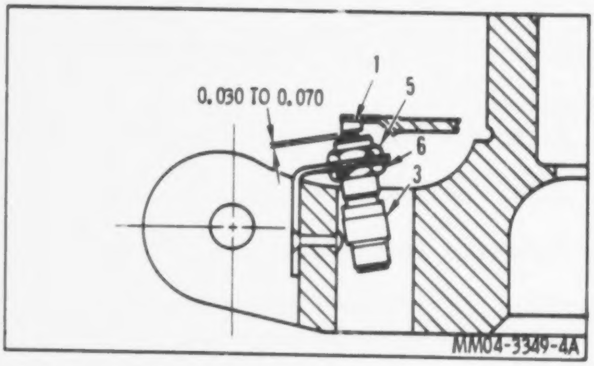
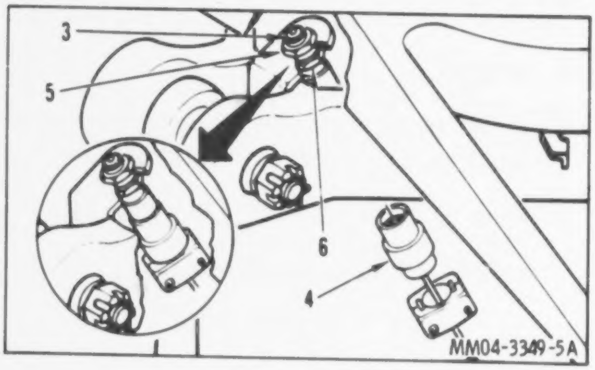
9-6-30. MOTIONAL TRANSDUCER REMOVAL/INSTALLATION (cont) 9-6-30

CAUTION

Exercise care when rotating swashplate to ensure that the transducer does not strike the interrupters. If transducer contacts interrupters, equipment damage will occur.

4. **Adjust transducer (3) so gap of 0.030 to 0.070 inch exists between transducer (3) and four interrupters (1).**
5. Tighten **locknuts (5) and (6).**
6. **Attach connector P57 (4) to transducer** MT32 **(3).**
7. Lockwire **locknut (6) to locknut (5) and connector P57 (4).** Use lockwire (E8).
8. **Inspect (TI).**
9. **Close access doors T250L, T250R, T290L, T290R and L325** (para 2-2-2).
10. **Perform main rotor track and** balance operational check (TM 55-1520-238-T).





END OF TASK

9-6-31. LANDING/SEARCHLIGHT RELAY UNIT REPLACEMENT 9-6-31

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Soldering Iron, Electric	3439-00-853-8760

Materials/Parts:

(E50) Solder

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24
TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access door R90 opened

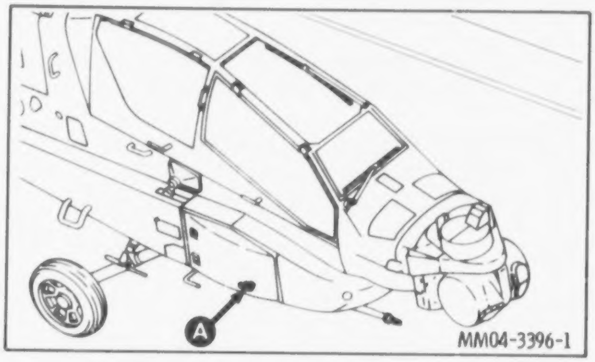
A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open LT SRCH/LDG AND LT SRCH/LDG CONTR circuit breakers on pilot center circuit breaker panel.

NOTE

Identify each wire and terminal during removal, for proper placement during installation.



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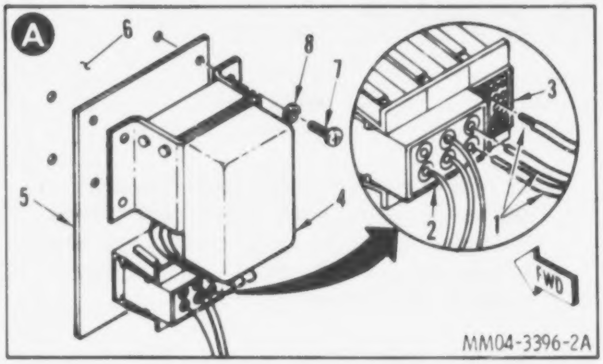
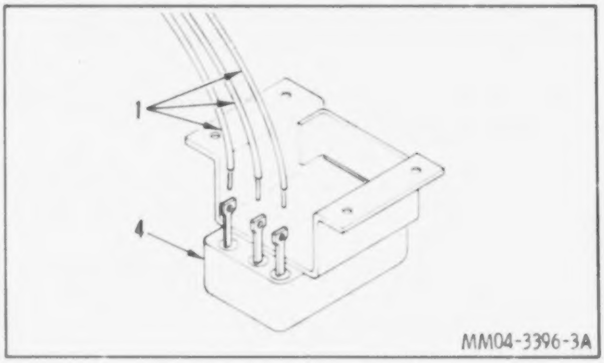
9-6-31. LANDING/SEARCHLIGHT RELAY UNIT REPLACEMENT (cont) 9-6-31





3. **Depin wires (1) from terminal blocks (2) and TB1-3 (3).** Identify and remove wires.

4. **Remove landing/searchlight relay unit (4) from mounting bracket (5) and structure (6).**

   a. Remove four screws (7) and washers (8).

   b. Remove relay unit (4) from bracket (5) and structure (6).

WARNING

Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

5. **Identify and desolder wires (1) from relay unit (4).** Use soldering iron (TM 55-1500-323-24).

B. **CLEANING**

Clean all removed and attaching parts (para 1-5-36).

C. **INSPECTION**

1. **Check bracket for:**

   a. Cracks, nicks, and dents. None allowed.

   b. Stripped or damaged nutplates (TM 55-1500-204-25/1).

   c. Corrosion (para 1-5-38).

2. **Check wire and TB1-1/2 and TB1-3 for wear, cuts, breaks, and damaged contacts.**

GO TO NEXT PAGE

9-6-31. LANDING/SEARCHLIGHT RELAY UNIT REPLACEMENT (cont) 9-6-31

D. INSTALLATION

WARNING

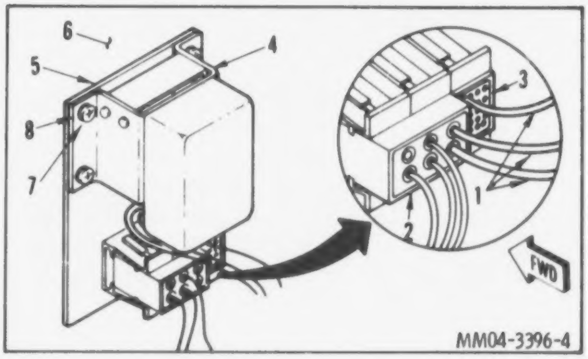
Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

1. **Solder identified wires (1) to relay unit (4).** Use soldering iron and solder (E50) (TM 55-1500-323-24).

2. **Install relay unit (4) to bracket (5) and structure (6).**

   a. Aline holes of unit (4) with holes on bracket (5) and structure (6).

   b. Install four screws (7) through washers (8), unit (4), bracket (5) into structure (6).



3. **Repin identified wires (1) from unit (4) to terminal blocks 1-1/2 (2) and to terminal blocks 3 (3).**

4. **Perform bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

5. **Inspect (TI).**

6. **Secure access door R90** (para 2-2-2).

7. **Perform landing/searchlight operational check** (TM 55-1520-238-T).

END OF TASK

SECTION VII. CAUTION AND WARNING COMPONENTS MAINTENANCE

9-7-1. CAUTION AND WARNING COMPONENTS INSPECTION 9-7-1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

1. Check pilot and CPG caution/ warning panels for loose mounting and loose or missing hardware.

2. Check pilot and CPG caution/ warning panel indicators for loose, missing, cracked, or broken lenses.

3. Check pilot and CPG master caution/warning panel wire harness for loose or broken wires. Check connector for loose mounting.

END OF TASK

9-7-2. PILOT CAUTION/WARNING PANEL REMOVAL/INSTALLATION 9-7-2

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

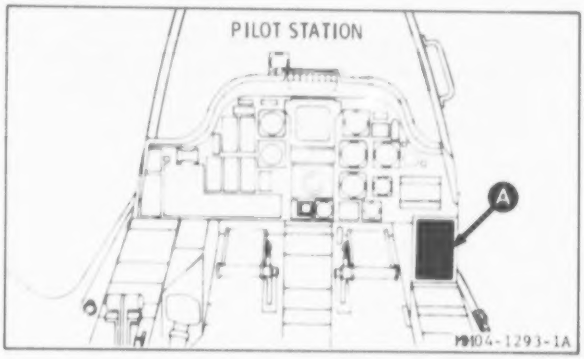
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open LT CAUT circuit breaker on pilot center circuit breaker panel.



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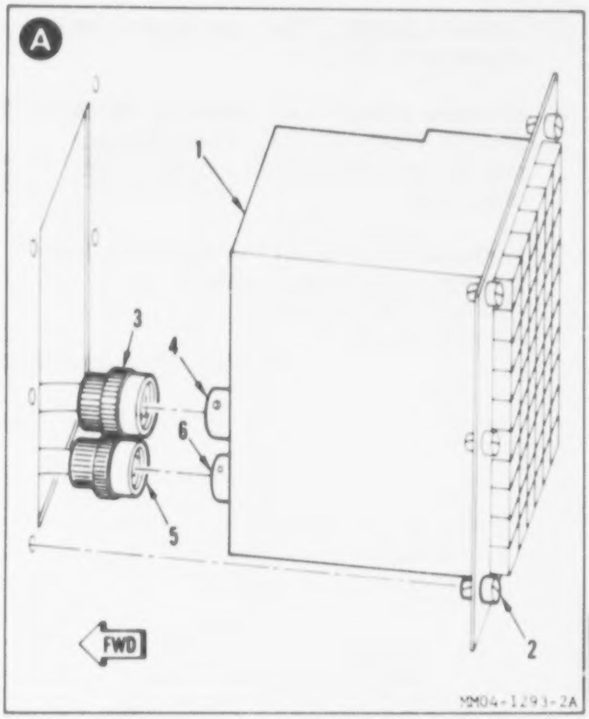
9-7-2. PILOT CAUTION/WARNING PANEL REMOVAL/INSTALLATION (cont) 9-7-2

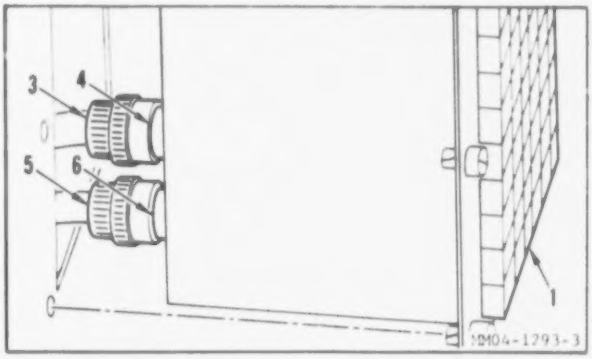
3. **Remove pilot caution/warning panel (1).** Unlock six Camloc fasteners (2).

4. **Detach two connectors from panel (1).**

   a. Detach connector P18 (3) from connector J1 (4).

   b. Detach connector P20 (5) from connector J2 (6).





B. CLEANING

Wipe panel mounting area of with a clean rag.

C. INSPECTION

Check connector for cracks, broken connections, or bent pins. No cracks allowed.

D. INSTALLATION

1. **Attach two connectors on pilot caution/warning panel (1).**

   a. Attach connector P20 (5) to connector J2 (4).

   b. Attach connector P18 (3) to connector J1 (6).

2. **Inspect (TI).**

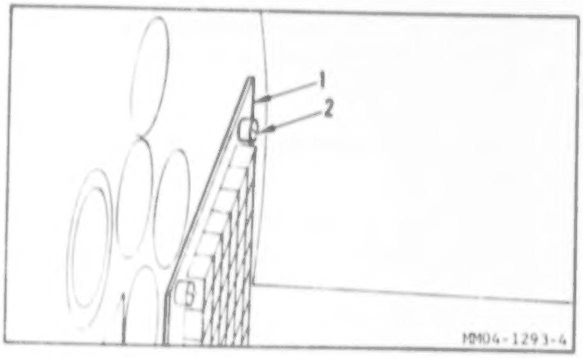
GO TO NEXT PAGE

9-7-2. PILOT CAUTION/WARNING PANEL REMOVAL/INSTALLATION (cont) 9-7-2

3. **Install panel (1).** Lock six Camloc fasteners (2).

4. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

5. **Perform pilot caution and warning system operational check** (TM 55-1520-238-T).



END OF TASK

9-7-3. CPG CAUTION/WARNING PANEL REMOVAL/INSTALLATION 9-7-3

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

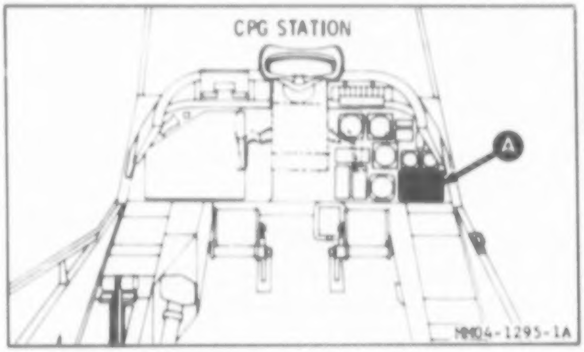
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. **REMOVAL**

1. **Enter CPG station (para 1-7-1). Observe all safety precautions.**

2. **Open EMERG BATT CAUT circuit breaker on CPG center circuit breaker panel No. 1.**

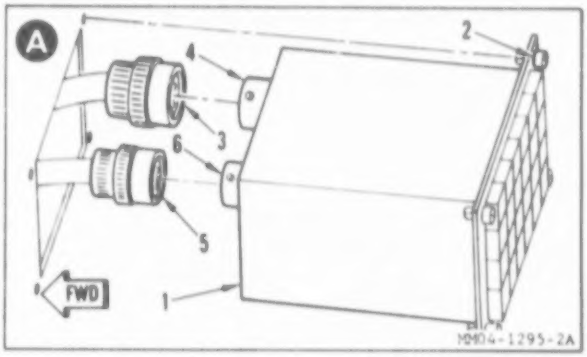


3. **Remove CPG caution/warning panel (1).** Open four Camloc fasteners (2).

4. **Detach two connectors from panel (1).**

   a. Detach connector P19 (3) from connector J1 (4).

   b. Detach connector P31 (5) from connector J2 (6).



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B. CLEANING

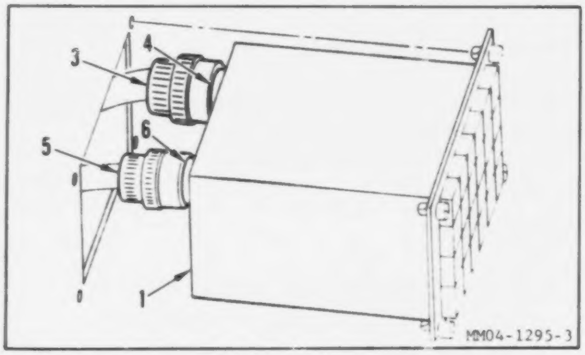
Wipe mounting area of panel with a clean rag.

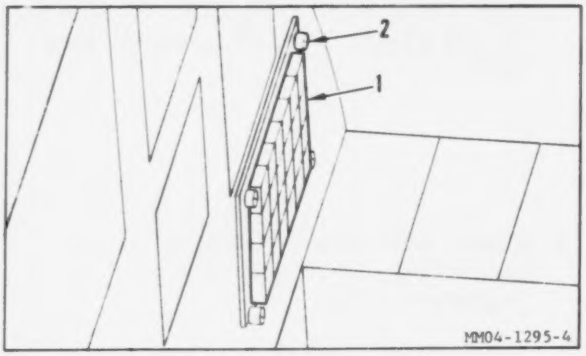
C. INSPECTION

Check connector for cracks, broken connections, or bent pins. No cracks allowed.

D. INSTALLATION

1. Attach two connectors to CPG caution/warning panel (1).
   a. Attach connector P19 (3) to connector J1 (4).
   b. Attach connector P31 (5) to connector J2 (6).
2. Inspect (TI).
3. Install panel (1). Lock four camloc fasteners (2).
4. Perform electrical bonding check (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.
5. Perform CPG caution and warning system operational check (TM 55-1520-238-T).





END OF TASK

9-7-4. PILOT OR CPG MASTER CAUTION/WARNING PANEL REMOVAL/INSTALLATION 9-7-4

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

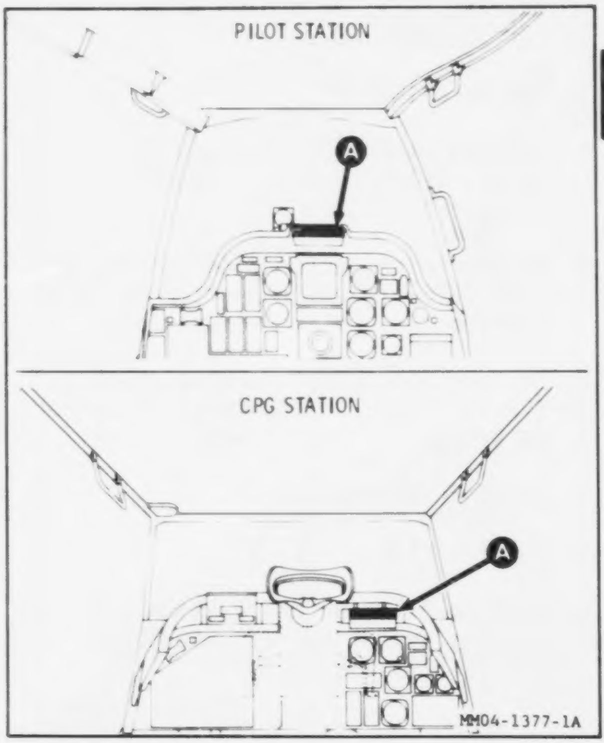
1. Enter pilot or CPG station (para 1-7-1). Observe all safety precautions.

2. Identify master caution panel (pilot or CPG) to be removed.

3. Open LT CAUT circuit breaker on pilot center circuit breaker or EMERG BATT CAUT circuit breaker on CPG circuit breaker panel No. 1.

NOTE

This task is typical for pilot or CPG master caution/warning panel.



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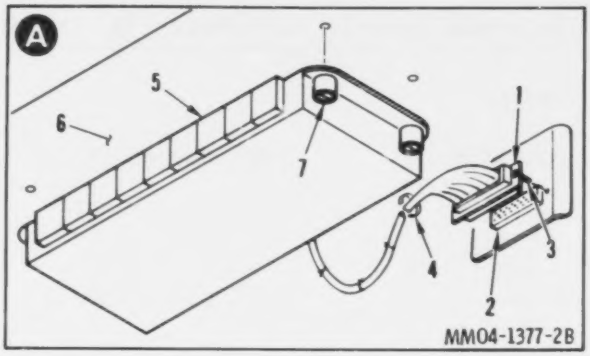
9-7-4. PILOT OR CPG MASTER CAUTION/WARNING PANEL REMOVAL/INSTALLATION (cont) 9-7-4



4. Detach connector J164 (pilot) or J166 (CPG) (1) from connector P1 (2). Loosen two captive screws (3).

5. Remove tiewrap (4).

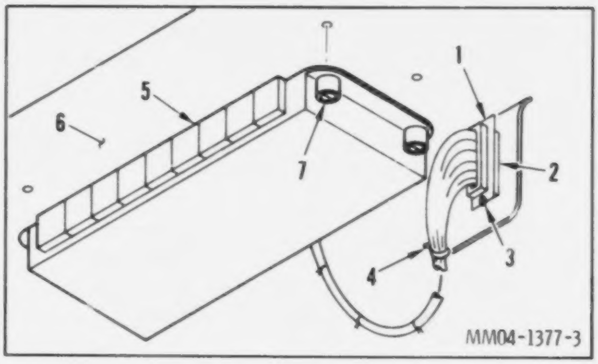
6. Remove master caution panel (5) from glareshield (6). Unlock four Camloc fasteners (7).

B. CLEANING

Clean removed parts and mounting surface (para 1-5-36).

C. INSPECTION

Check connectors for damaged pins, cracks, cuts, or broken wires (TM 55-1500-323-24).



D. INSTALLATION

1. Install panel (5) on glareshield (6). Lock four Camloc fasteners (7).

2. Attach to connector J164 (pilot) or J166 (CPG) (2) to connector P1 (1). Tighten two captive screws (3).

3. Perform electrical bonding check (TM 55-1500-323-24). Resistance not to exceed 0.1 ohms. Use ohmmeter.

4. Install tiewrap (4).

5. Inspect (TI).

6. Perform pilot or CPG caution and warning system operational check (TM 55-1520-238-T).

END OF TASK

9-7-5. PILOT OR CPG CAUTION/WARNING AND MASTER CAUTION/WARNING PANEL LAMP REPLACEMENT 9-7-5

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical, Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

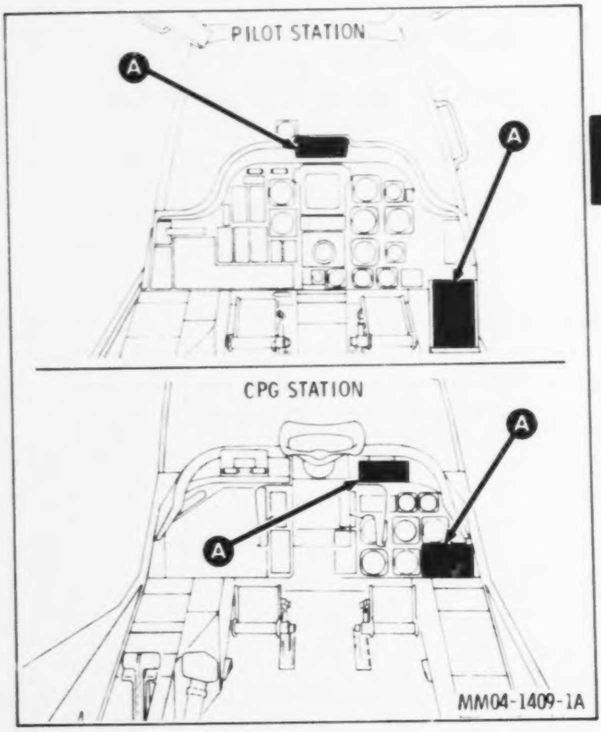
Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot or CPG station (para 1-7-1). Observe all safety precautions.
2. Identify master caution panel (pilot or CPG) to be removed.
3. Open LT CAUT circuit breaker on pilot center circuit breaker or EMERG BATT CAUT circuit breaker on CPG circuit breaker panel No. 1.

NOTE

This task is typical for pilot or CPG master caution/warning panel.



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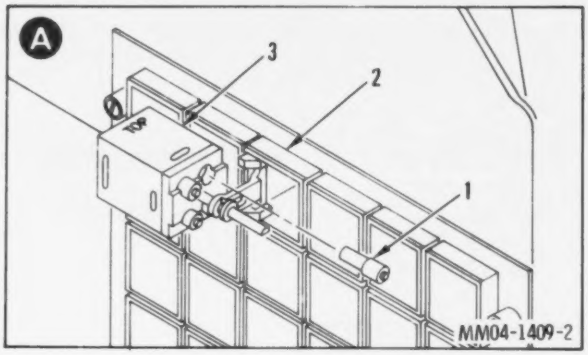
9-7-5. PILOT OR CPG CAUTION/WARNING AND MASTER CAUTION/WARNING PANEL LAMP REPLACEMENT (cont) 9-7-5

4. **Remove lamp (1) from caution/ warning panel (2).**

   a. Pull lens cap (3) from panel (2) and move to one side.

   b. Remove lamp (1) from cap (3).



CAUTION

- To prevent damage to legends, lens caps must be installed with top-to-top and bottom-to-bottom as shown.
- Caps installed incorrectly are unusable if they are pulled out.

B. **INSTALLATION**

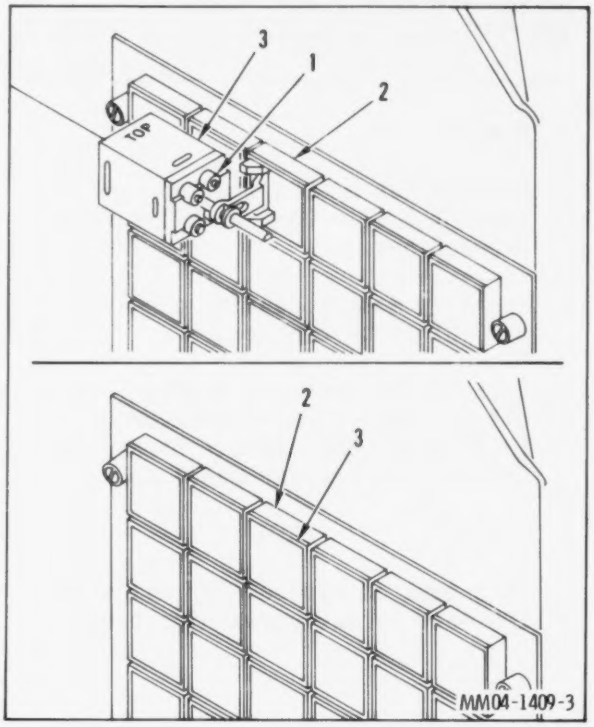
1. **Install lamp (1) in panel (2).**

   a. Insert lamp (1) in cap (3).

   b. Aline cap (3) with caution/ warning panel (2) and push to seat.

2. **Inspect (TI).**

3. **Perform pilot or CPG caution and warning system operational check (TM 55-1520-238-T).**



END OF TASK

9-7-6. PILOT CAUTION/WARNING PANEL CIRCUIT CARD REPLACEMENT (AVIM)

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electronic Equipment TK101	5180-00-064-5178

Personnel Required:

35B10	Electronic Instrument Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

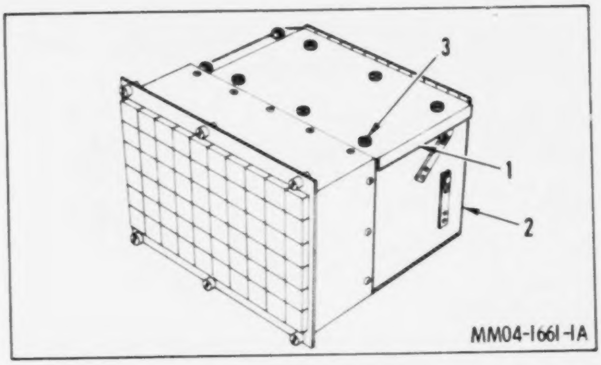
Ref	Condition
9-7-2	Pilot caution/warning panel removed

NOTE

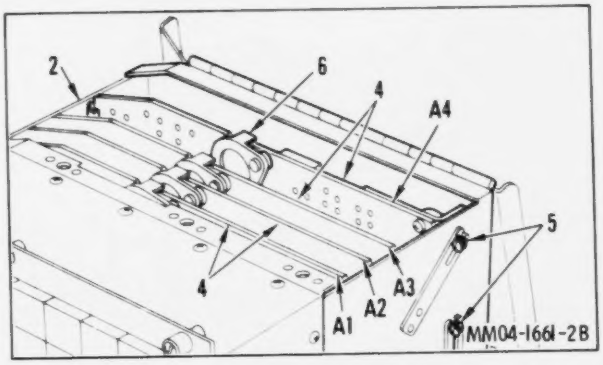
This task is typical for circuit cards A1, A2, A3, or A4 except where noted.

A. REMOVAL

1. **Open cover (1) on pilot caution/ warning panel (2).** Unlock eight Camloc fasteners (3).



2. **Remove circuit card (4) from panel (2).**
   a. For circuit card assembly A4, unlock two Camloc fasteners (5).
   b. Raise plastic ring (6) on card (4).
   c. Use plastic ring (6) to pull card (4) from panel (2).



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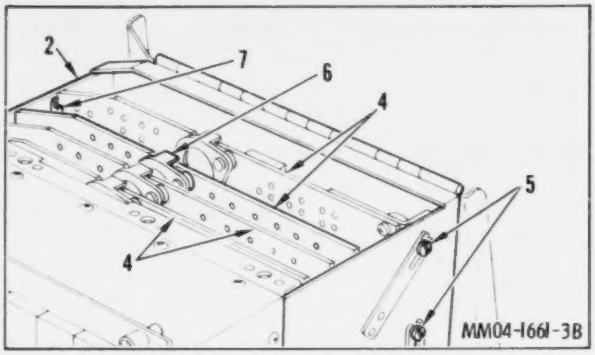
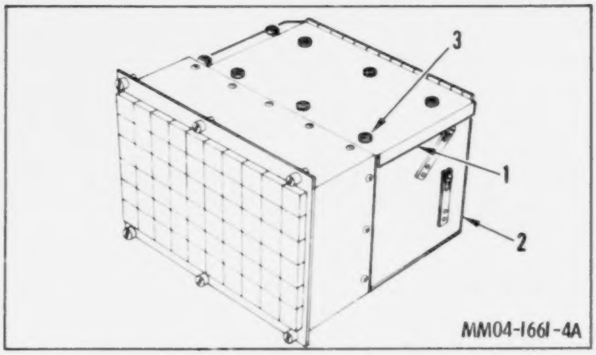
9-7-6. PILOT CAUTION/WARNING PANEL CIRCUIT CARD REPLACEMENT (AVIM) (cont) 9-7-6

B. INSTALLATION

1. Install circuit card (4) in panel (2).
   - a. Aline card (4) with guides (7).
   - b. Press down on card (4) to seat.
   - c. Secure plastic ring (6) on card (4).
   - d. For card A4, lock two Camloc fasteners (5).
2. Inspect (TI).
3. Close cover (1) on panel (2). Lock eight Camloc fasteners (3).





END OF TASK

9-7-7. CPG CAUTION/WARNING PANEL CIRCUIT CARD REPLACEMENT (AVIM) 9-7-7

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electronic Equipment TK101	5180-00-064-5178

Personnel Required:

35B10	Electronic Instrument Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

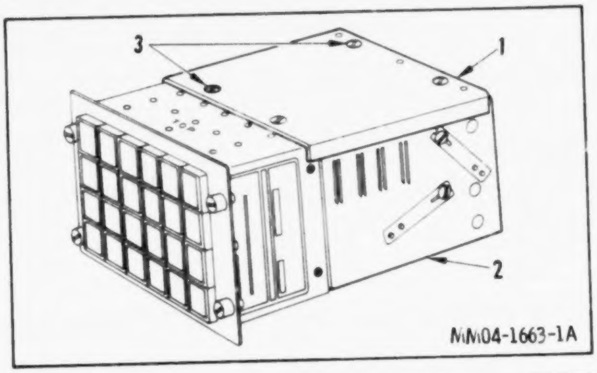
Ref	Condition
9-7-3	CPG caution/warning panel removed

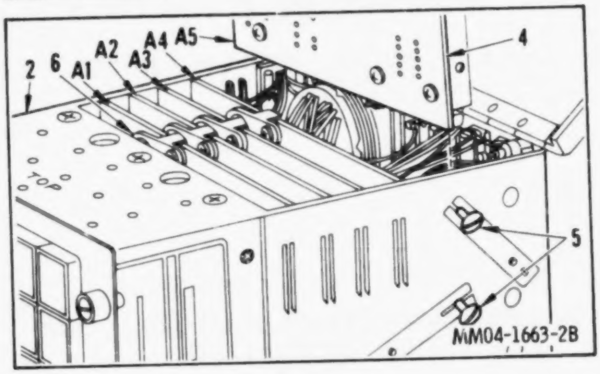
A. REMOVAL

NOTE

This task circuit cards A1, A2, A3, A4, or A5 except where noted.

1. **Open cover (1) on CPG caution/warning panel (2).** Unlock four Camloc fasteners (3).
2. **Remove card (4) from panel (2).**
   a. For card A5, unlock two Camloc fasteners (5).
   b. Raise plastic ring (6) on card (4).
   c. Use plastic ring (6) to pull card (4) from panel (2).





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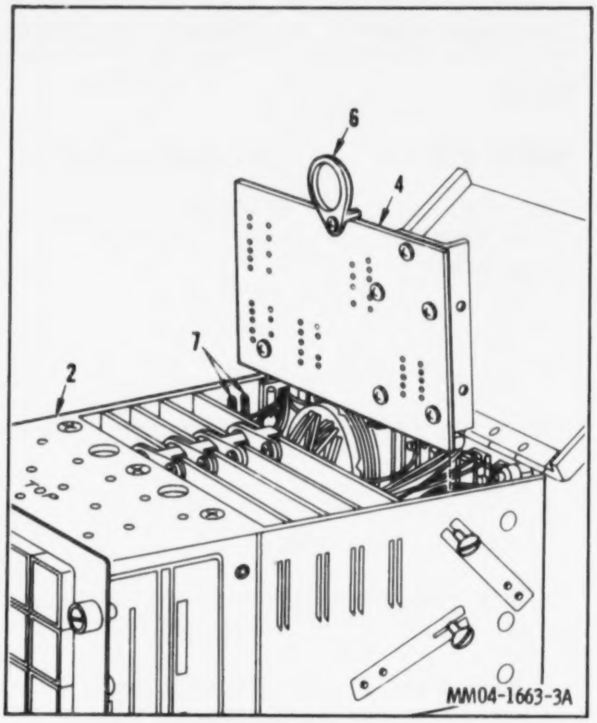
9-7-7. PILOT CAUTION/WARNING PANEL CIRCUIT CARD ASSEMBLY REPLACEMENT (AVIM) (cont) 9-7-7

B. INSTALLATION

1. Install circuit card (4) in panel (2).

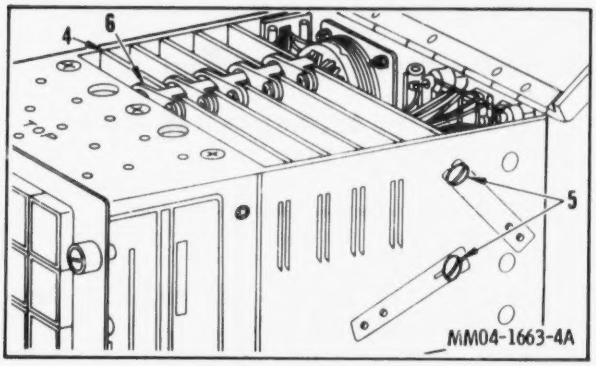
   a. Aline card (4) with guides (7).


6
4
7
2
MM04-1663-3A

   b. Press down on card (4) to seat.

   c. Secure ring (6) on card (4).

   d. For card A5, lock two Camloc fasteners (5).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6
5
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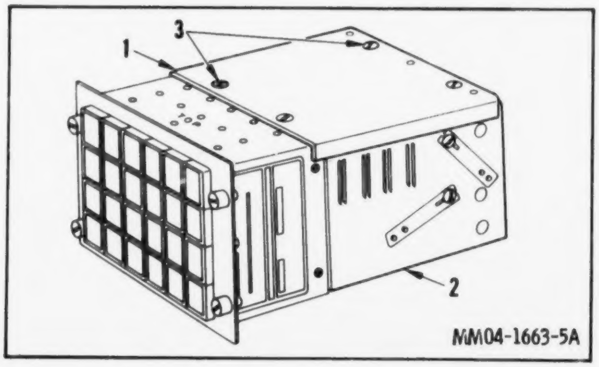
2. Inspect (TI).

3. Close cover (1) on panel (2). Lock four Camloc fasteners (3).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1
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END OF TASK

9-7-8. ENGINE OUT WARNING CONTROL REMOVAL/INSTALLATION 9-7-8

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Fairing L140 removed

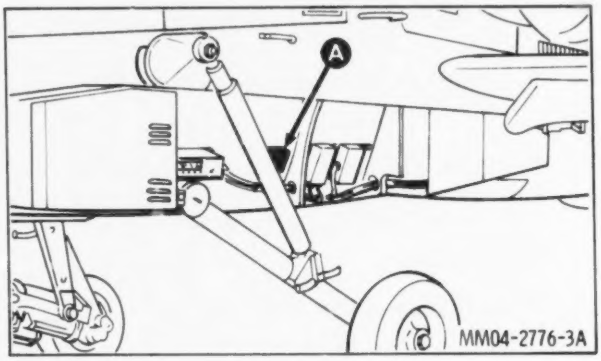
A. REMOVAL

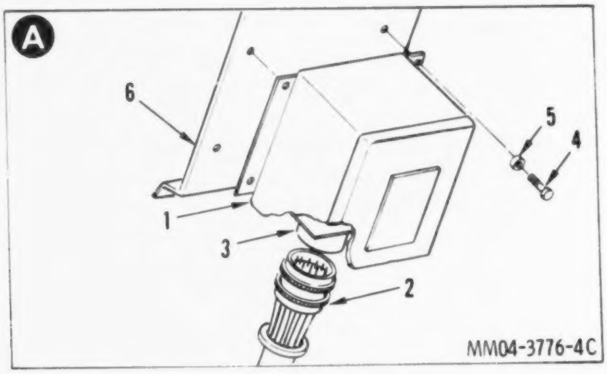
1. Remove engine out warning control (1).

   a. Detach connector P49 (2) from connector J1 (3).

   b. Remove four screws (4) and washers (5).

   c. Remove control (1) from mount (6).





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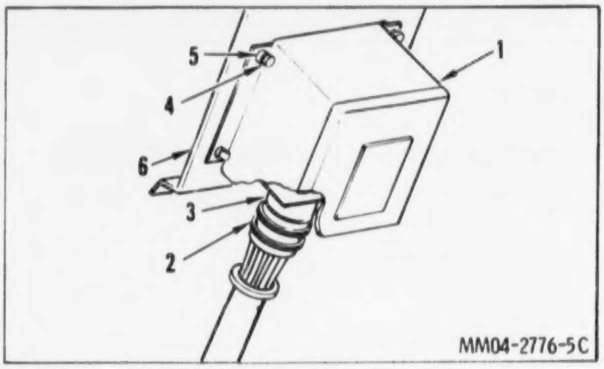
9-7-8. ENGINE OUT WARNING CONTROL REMOVAL/INSTALLATION (cont) 9-7-8



B. CLEANING

Wipe mounting area control with a clean rag.

C. INSPECTION

1. Check control for cracks, nicks, and dents. None allowed.

2. Check control mounting area for stripped or damaged nut plates. None allowed.

D. INSTALLATION

1. Install engine out warning control (1).

    a. Aline control (1) and mount (6).

    b. Install four washers (5) with screws (4).

2. Perform electrical bonding check (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. Attach connector P49 (2) to connector J1 (3).

4. Inspect (TI).

5. Secure fairing L140 (para 2-2-2).

6. Perform audio warning system operational check (TM 55-1520-238-T).

END OF TASK

9-7-9. CPG FUEL XFER ADVISORY LIGHT REPLACEMENT 9-7-9

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1500-323-24

Equipment Conditions:

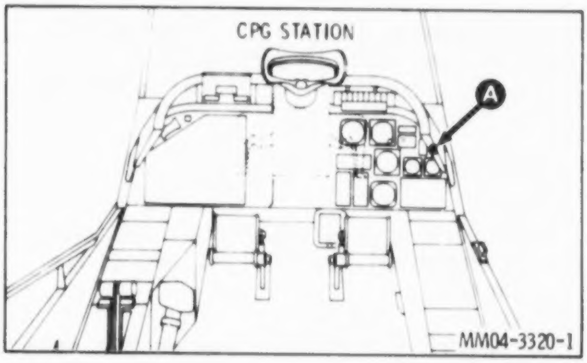
Ref	Condition
1-7-2	Helicopter safed
9-7-3	CPG caution/warning panel removed

A. REMOVAL

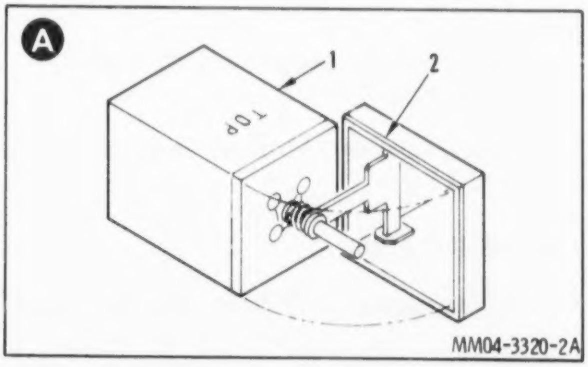
1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

2. **Open FUEL TRANS circuit breaker on pilot center circuit breaker panel.**

3. **Enter CPG station (para 1-7-1). Observe all safety precautions.**



4. **Pull lamp segment (1) from body (2).** Pull segment (1) from body (2) and move to one side.



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9-7-9. CPG FUEL XFER ADVISORY LIGHT REPLACEMENT (cont) 9-7-9

CAUTION

Advisory light body is secured to mounting sleeve by two integral screws. To prevent damage to light, do not back screws out too far.

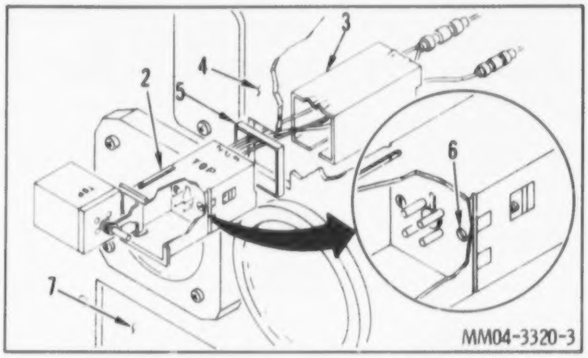
5. **Remove body (2) from mounting sleeve (3), instrument panel (4), and mounting spacer (5).**

   a. Hold sleeve (3).

   b. Loosen two screws (6).

   c. Pull body (2) and spacer (5) aft out of panel (4).

   d. Remove sleeve (3) from behind panel (4) through CPG caution/warning panel mounting hole (7).



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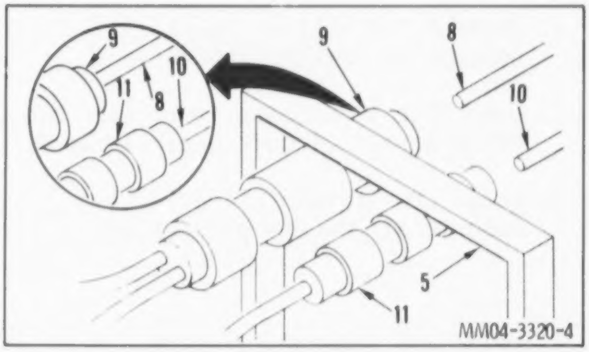


MM04-3320-4

NOTE

Ensure that wires do not retract through advisory light mounting hole.

6. **Desplice wire (8) from double splice (9).**

7. **Desplice ground wire (10) from single splice (11).**

8. **Slide spacer (5) from splices (9) and (11).**

B. INSTALLATION

1. **Slide spacer (5) over two splices (9) and (11).**

2. **Splice wire (10) to single splice (11).**

3. **Splice wire (8) to double splice (9).**

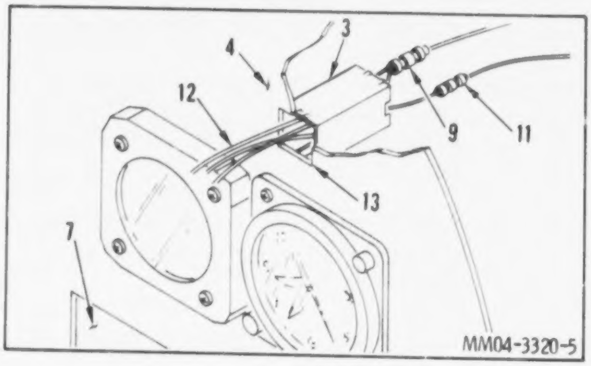
4. **Inspect (TI).**

GO TO NEXT PAGE

NOTE

Sleeve must be positioned with long slot down and side slots toward front of helicopter.

5. **Position and hold sleeve (3) behind panel (4).**
   - a. Insert sleeve (3) through hole (7).
   - b. Hold splices (9) and (11).
   - c. Position mounting sleeve (3) around wires (12).
   - d. Aline sleeve (3) with advisory light mounting hole (13) so long slot on sleeve (3) is down, and side slots are toward front of helicopter.

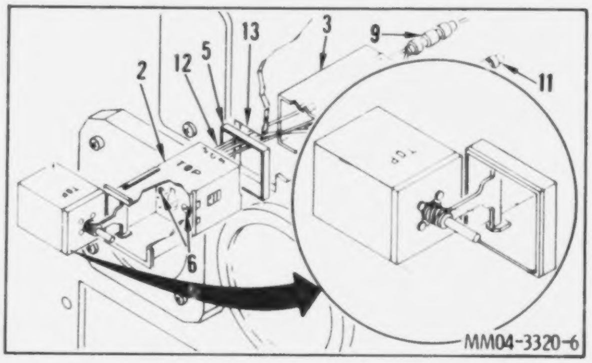


9-7-9. CPG FUEL XFER ADVISORY LIGHT REPLACEMENT (cont) 9-7-9

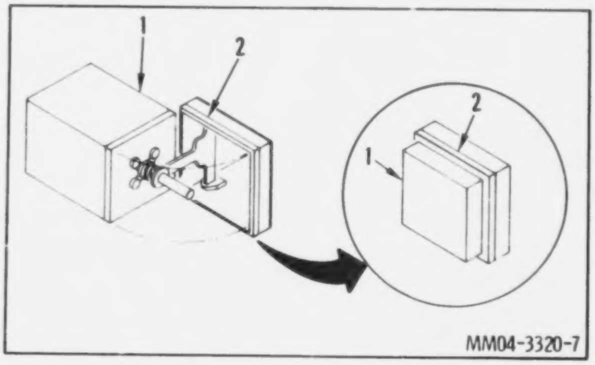
CAUTION

- Advisory light body is secured to mounting sleeve by two integral mounting screws. To prevent damage to light assembly, do not overtighten.
- To prevent damage to legends, lens caps must be installed with top-to-top and bottom-to-bottom as shown.
- Caps installed incorrectly are unusable if they are pulled out.

6. **Install body (2) through panel (4) into sleeve (3).**
   a. Position body (2) with TOP up.
   b. Insert wires (12), splices (9) and (11), and body (2) through spacer (5) and hole (13) in panel (4), then into sleeve (3).
   c. Tighten two screws (6).



7. **Install segment (1) into body (2).** Aline segment (1) with body (2) and push to seat.
8. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.
9. **Inspect (TI).**
10. **Install CPG caution/warning panel** (para 9-7-3).



END OF TASK

9-7-10. PILOT FUEL XFER ADVISORY LIGHT REPLACEMENT 9-7-10

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 9-1230-476-20-1
TM 55-1500-323-24

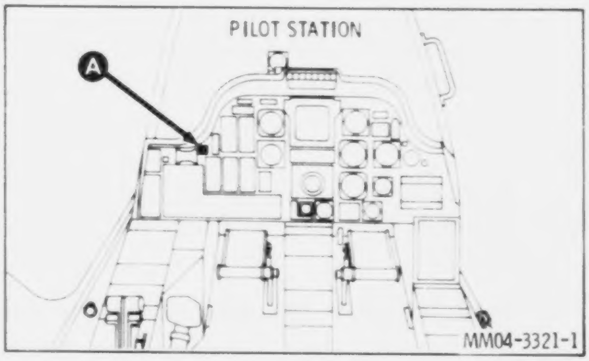
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
9-7-2	Pilot fire control panel removed

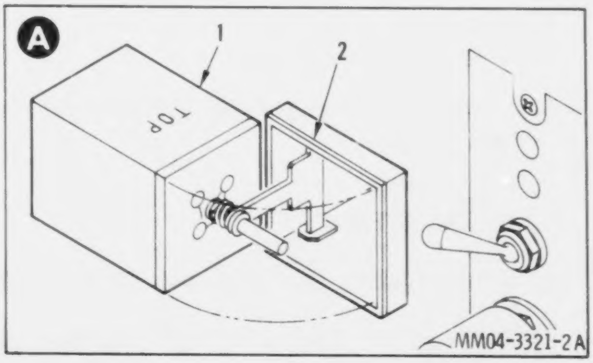
A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open FUEL TRANS circuit breaker on pilot center circuit breaker panel.



3. **Pull lamp segment (1) from body (2).** Pull segment (1) from body (2) and move to one side.



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9-7-10. PILOT FUEL XFER ADVISORY LIGHT REPLACEMENT (cont) 9-7-10

CAUTION

Advisory light body is secured to mounting sleeve by two integral mounting screws. To prevent damage to light assembly, do not back screws out too far.

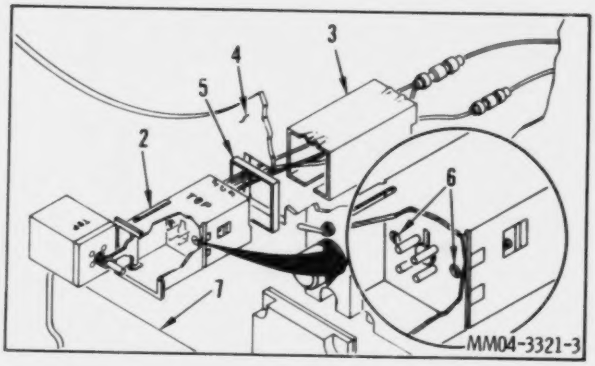
4. **Remove body (2) from mounting sleeve (3), instrument panel (4), and mounting spacer (5).**

   a. Hold sleeve (3).

   b. Loosen two screws (6).

   c. Pull body (2) and spacer (5) aft out of panel (4).

   d. Remove sleeve (3) from behind panel (4) through pilot FIRE CONTROL panel mounting hole (7).



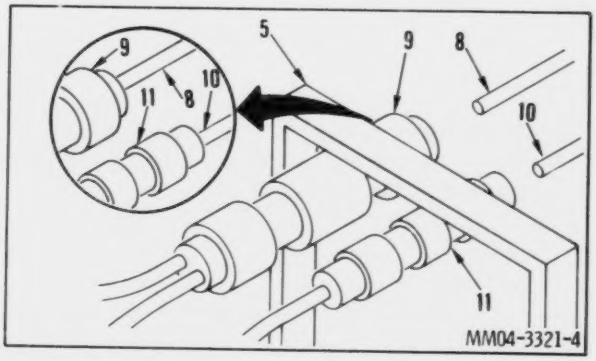
NOTE

Ensure that wires do not retract through advisory light mounting hole.

5. **Desplice wire (8) from double splice (9).**

6. **Desplice ground wire (10) from single splice (11).**

7. **Slide spacer (5) from splices (9) and (11).**



B. INSTALLATION

1. **Slide spacer (5) over two splices (9) and (11).**
2. **Splice wire (10) to single splice (11).**
3. **Splice remaining wire (8) to double splice (9).**
4. **Inspect (TI).**

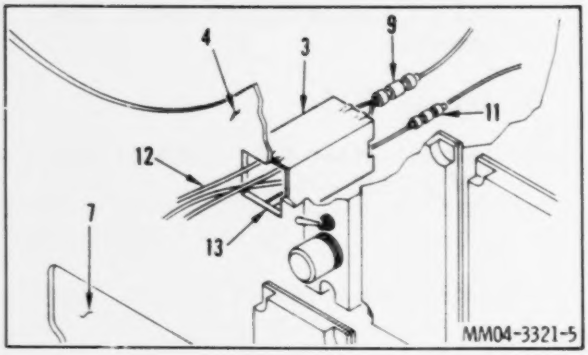
GO TO NEXT PAGE

9-7-10. PILOT FUEL XFER ADVISORY LIGHT REPLACEMENT (cont) 9-7-10

NOTE

Sleeve must be positioned with long slot down and side slots toward front of helicopter.

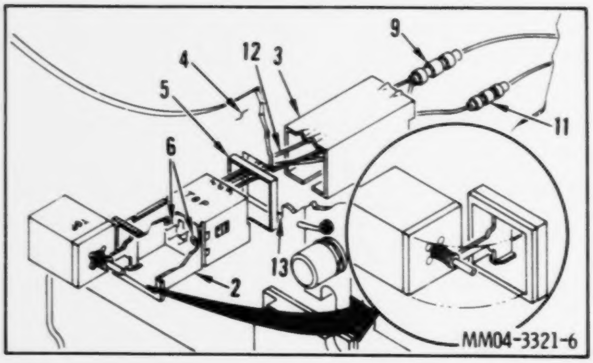
5. **Position and hold mounting sleeve (3) behind panel (4).**
   a. Insert sleeve (3) through hole (7).
   b. Hold splices (9) and (11).
   c. Position sleeve (3) around wires (12).
   d. Aline sleeve (3) with advisory light mounting hole (13) so long slot on sleeve (3) is down, and side slots are toward front of helicopter.



CAUTION

- Advisory light body is secured to mounting sleeve by two integral mounting screws. To prevent damage to light assembly, do not overtighten.
- To prevent damage to legends, lens caps must be installed with top-to-top and bottom-to-bottom as shown.
- Caps installed incorrectly are unusable if they are pulled out.

6. **Install body (2) through panel (4) into sleeve (3).**
   a. Position body (2) with TOP placard up.
   b. Insert wires (12), splices (9) and (11), and body (2) through spacer (5) and hole (13) in panel (4), then into sleeve (3).
   c. Tighten two screws (6).



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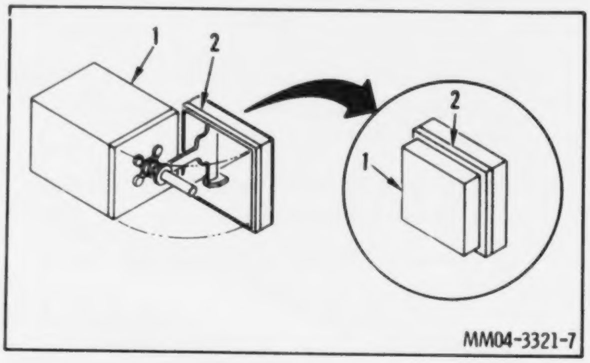
9-7-10. PILOT FUEL XFER ADVISORY LIGHT REPLACEMENT (cont) 9-7-10

7. **Install segment (1) into body (2).** Aline lamp segment (1) with body (2) and push to seat.

8. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

9. **Inspect (TI).**

10. **Install pilot FIRE CONTROL panel** (TM 9-1230-476-20-1).



END OF TASK

SECTION VIII. MISCELLANEOUS ELECTRICAL COMPONENTS MAINTENANCE

9-8-1. MISCELLANEOUS ELECTRICAL COMPONENTS INSPECTION 9-8-1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

1. Check components for damage and loose mounting.
2. Check for loose, missing, or damaged hardware.
3. Check wire bundles for chafing, mounting security, and broken or missing tiewraps.
4. Check wiring for cracked, broken, or burned insulation.
5. Check wire terminals for deformation and loose mounting.
6. Check circuit breakers for condition and loose mounting.
7. Check circuit breaker edge lighted panels for cracks, legibility, and loose mounting.

END OF TASK

9-8-2. MAINT LT OR APU CIRCUIT BREAKER REMOVAL 9-8-2

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

Personnel Required:

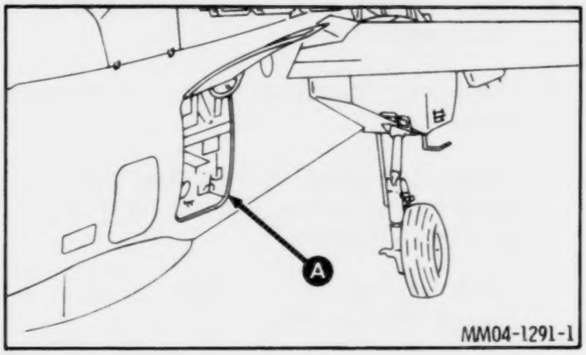
68F10 Aircraft Electrician

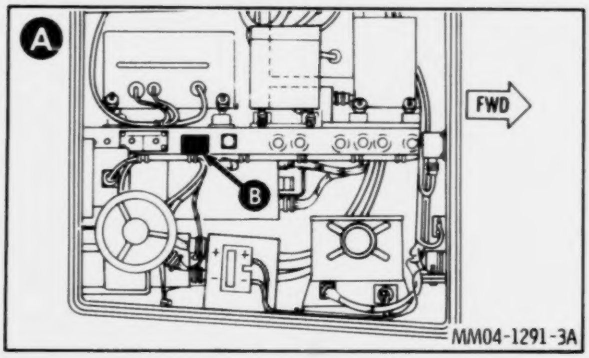
1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open six POWER circuit breakers on pilot aft circuit breaker panel.

NOTE

This task is typical for both circuit breakers.





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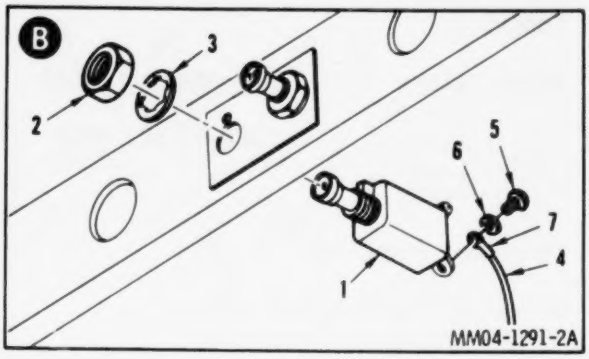
9-8-2. MAINT LT OR APU CIRCUIT BREAKER REMOVAL (cont) 9-8-2



3. **Remove MAINT LT (CB8) or APU (CB148) circuit breaker (1).** Remove nut (2) and washer (3).

NOTE

Identify each wire and terminal during removal, for proper placement during installation.

4. **Disconnect wires (4) from circuit breaker (1).**

   a. Identify two wires (4).

   b. Remove two screws (5), washers (6), and terminal lugs (7).

END OF TASK

9-8-3. MAINT LT OR APU CIRCUIT BREAKER INSTALLATION 9-8-3

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

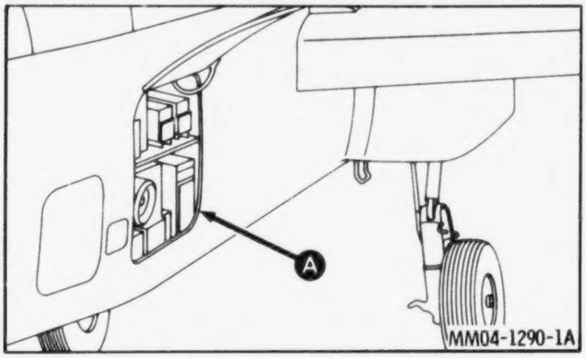
TM 55-1520-238-T

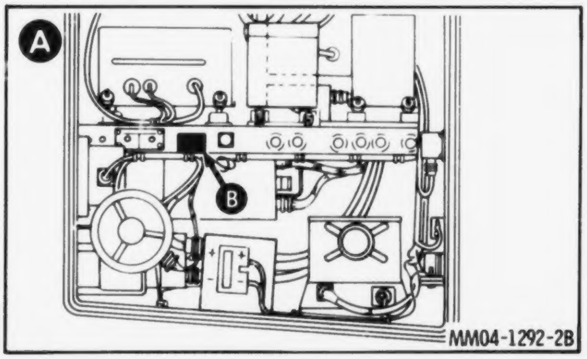
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

NOTE

This task is typical for both circuit breakers.





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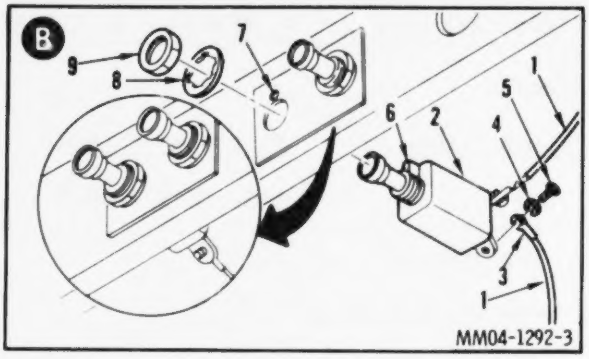
9-8-3. MAINT LT OR APU CIRCUIT BREAKER INSTALLATION (cont) 9-8-3



1. **Attach identified wires (1) to circuit breaker (2).** Install two terminal lugs (3), washers (4), and screws (5).
2. **Install circuit breaker (2).**
   - a. Position circuit breaker (2) so tab (6) seats in hole (7).
   - b. Install washer (8) and nut (9).
3. **Inspect (TI).**
4. **Perform maintenance lights or auxiliary power unit operational check** (TM 55-1520-238-T).
5. **Secure access door R295** (para 2-2-2).

END OF TASK

9-8-4. PILOT CIRCUIT BREAKERS (NOT ATTACHED TO BUS BARS) REPLACEMENT 9-8-4

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

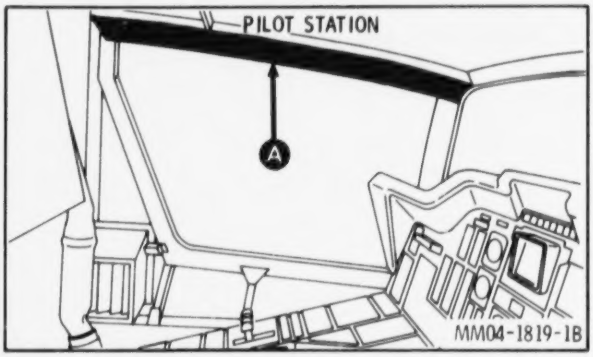
TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
9-8-6	Pilot circuit breaker panel removed

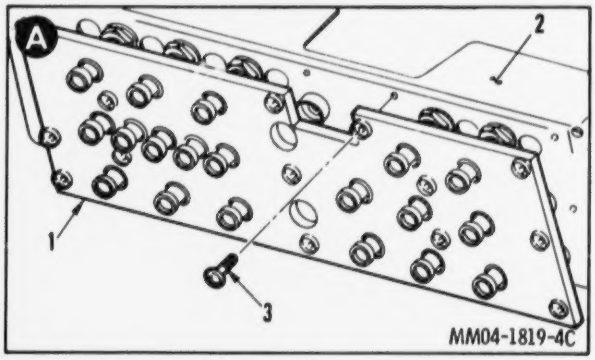
NOTE

This task is typical for all circuit breakers not attached to bus bars. The numbers of wires and screws may differ on each panel.



A. REMOVAL

1. Remove edge lighted panel (1) from circuit breaker panel (2). Remove screws (3).



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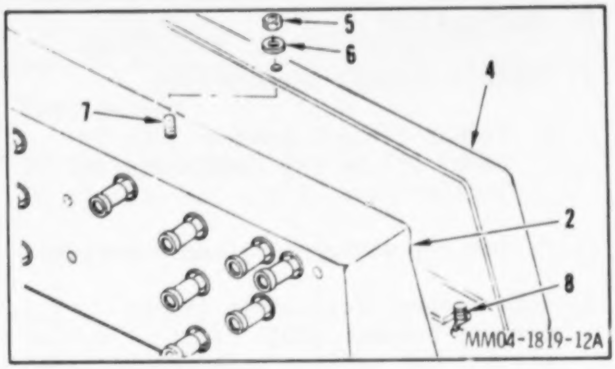
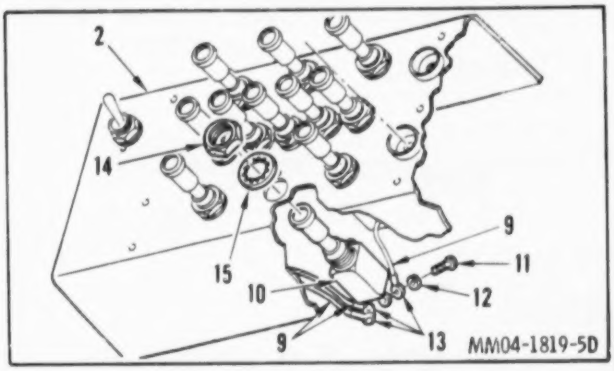
9-8-4. PILOT CIRCUIT BREAKERS (NOT ATTACHED TO BUS BARS) REPLACEMENT (cont) 9-8-4



2. **Remove back cover (4) from panel (2).** Remove nuts (5) and washers (6) from studs (7) and screws (8) as required.

NOTE

Identify each wire and terminal during removal, for proper placement during installation.



3. **Detach wires (9) from circuit breaker (10).**

   a. Identify wires (9) attached to circuit breaker (10).

   b. Remove screws (11), washers (12), and terminal lugs (13).

4. **Remove circuit breaker (10).** Remove nut (14) and washer (15).

B. **CLEANING**

Wipe circuit breaker mounting surface with a clean rag.

C. **INSPECTION**

1. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).

2. **Check circuit breaker panel for dust and other contamination.** Remove contamination and dust.

GO TO NEXT PAGE

9-8-4. PILOT CIRCUIT BREAKERS (NOT ATTACHED TO BUS BARS) REPLACEMENT (cont) 9-8-4

D. INSTALLATION

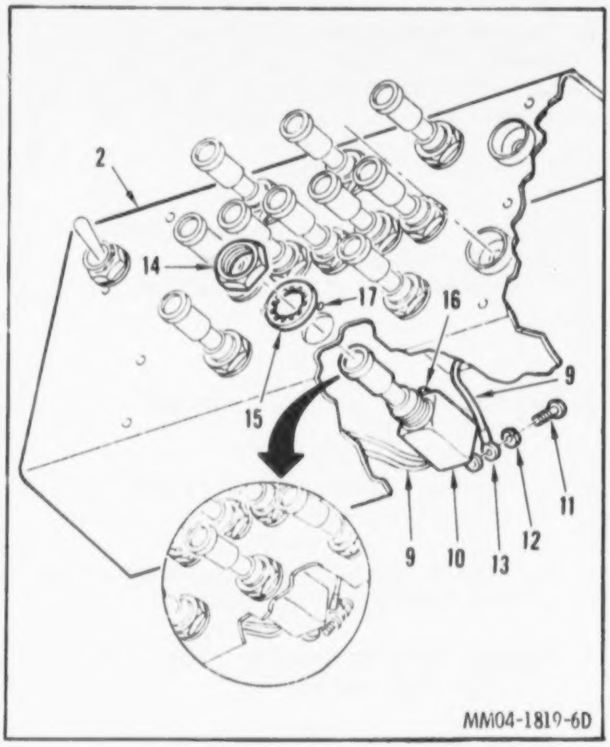
1. **Install circuit breaker (10).**

   a. Insert circuit breaker (10) in panel (2) so tab (16) seats in locator hole (17).

   b. Install washer (15) and nut (14).

2. **Attach identified wires (9) to circuit breaker (10).** Install screws (11)through washers (12) and terminal lugs (13) into circuit breaker (10)..

3. **Inspect (TI).**

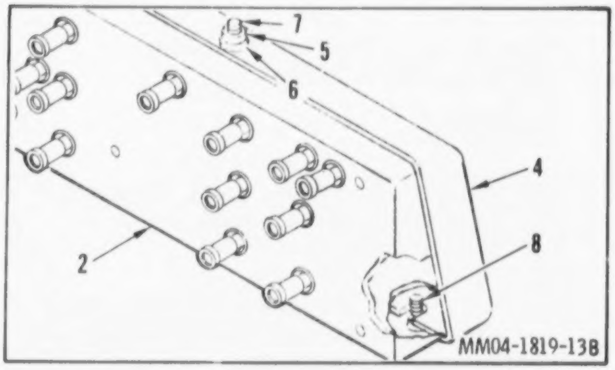


MM04-1819-6D

4. **Install cover (4) on panel (2).**

   a. Position cover (4) over studs (7).

   b. Install washers (6) and nuts (5) on studs (7) and screws (8) as required.

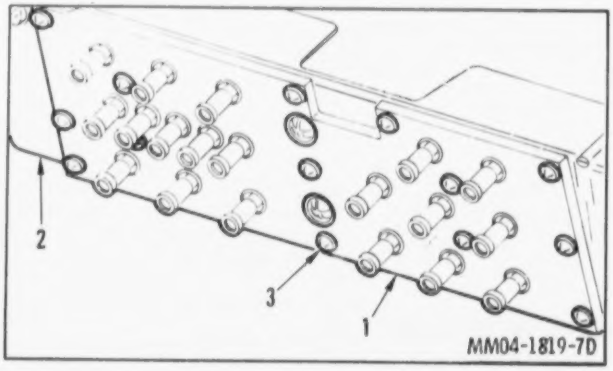


MM04-1819-13B

5. **Install edge lighted panel (1).** Install screws (3).

6. **Install pilot circuit breaker panel** (para 9-8-7).

7. **Refer to circuit breaker reference list to perform appropriate operational check** (TM 55-1520-238-T).



MM04-1819-7D

END OF TASK

9-8-5. PILOT CIRCUIT BREAKERS (ATTACHED TO BUS BARS) REPLACEMENT 9-8-5

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

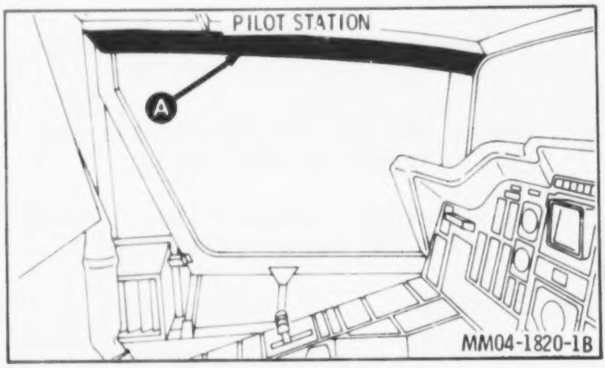
TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
9-8-6	Pilot circuit breaker panel removed

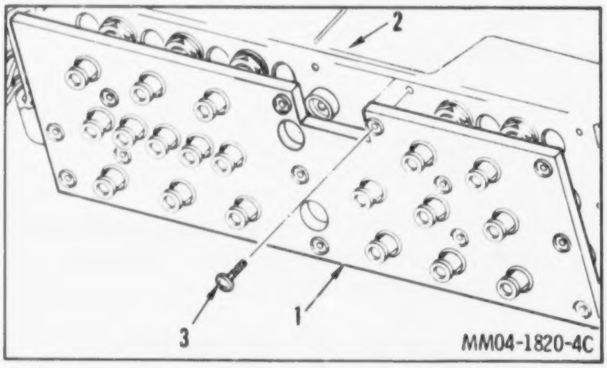
NOTE

This task is typical for all circuit breakers attached to bus bars. The bus bar must be removed to remove any circuit breaker attached to it. The numbers of wires and screws may differ on each panel.



A. REMOVAL

1. Remove edge lighted panel (1) from circuit breaker panel (2). Remove screws (3).



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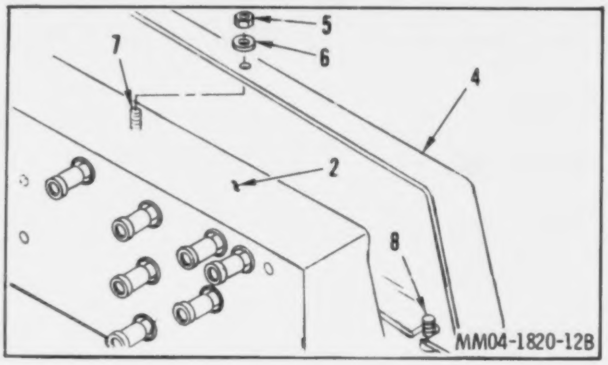
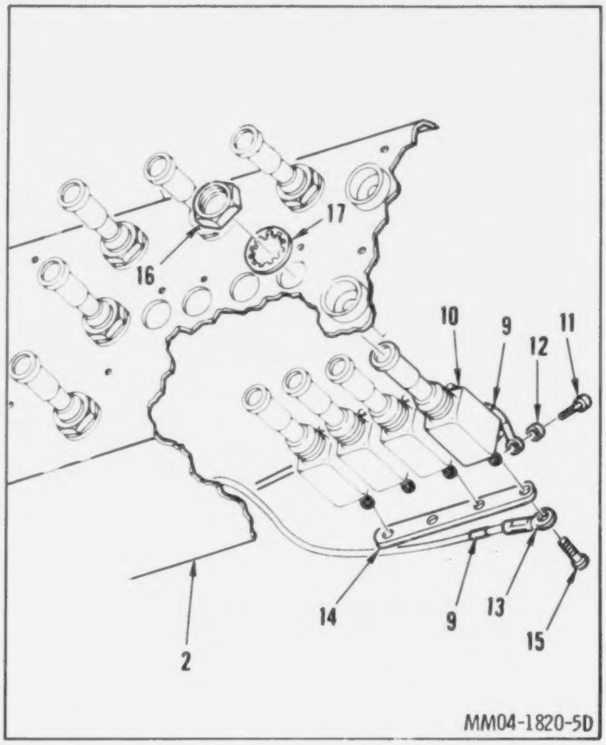
9-8-5. PILOT CIRCUIT BREAKERS (ATTACHED TO BUS BARS) REPLACEMENT (cont) 9-8-5



2. **Remove back cover (4) from panel (2).** Remove nuts (5) and washers (6) from studs (7) and screws (8) as required.

NOTE

Identify each wire and terminal during removal, for proper placement during installation.



3. **Detach wires (9) from circuit breaker (10).**

   a. Identify wires (9).

   b. Remove screws (11), washers (12), and terminal lugs (13).

4. **Remove bus bar (14).** Hold bus bar (14). Remove screws (15).

5. **Remove circuit breaker (10).** Remove nut (16) and washer (17).

B. CLEANING

Wipe circuit breaker mounting surface with a clean rag.

C. INSPECTION

1. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).

2. **Check circuit breaker panel for dust and other contamination.** Remove contamination and dust.

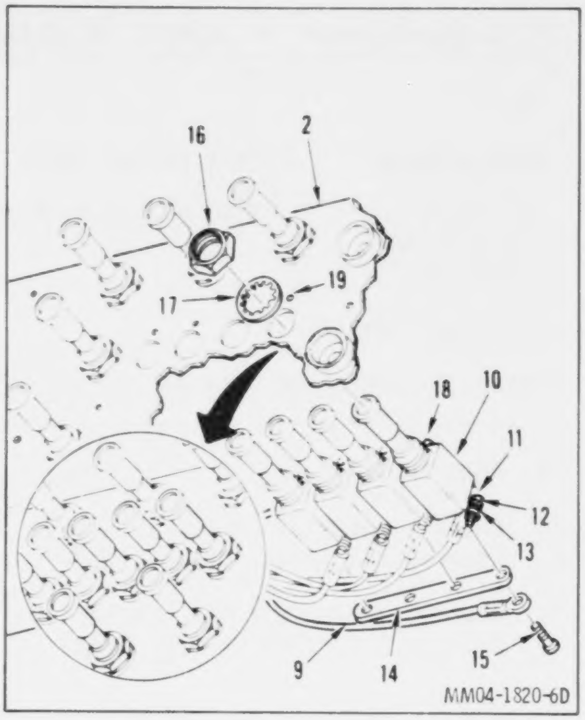
3. **Check bus bar for arcing burns.**

GO TO NEXT PAGE

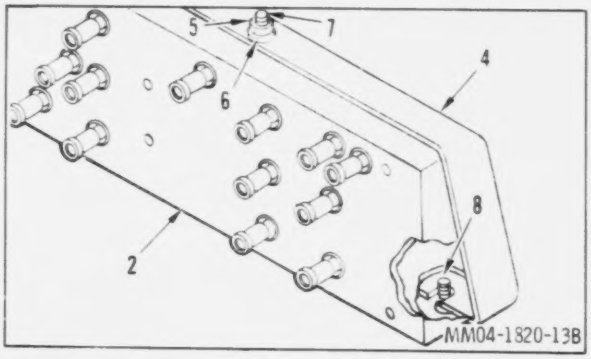
9-8-5. PILOT CIRCUIT BREAKERS (ATTACHED TO BUS BARS) REPLACEMENT (cont) 9-8-5

D. INSTALLATION

1. **Install circuit breaker (10).**
   - a. Insert circuit breaker (10) in panel (2) so tab (18) seats in locator hole (19).
   - b. Install washer (17) and nut (16).
2. **Install bus bar (14).** Install screws (15).
3. **Attach identified wires (9) to circuit breaker (10).** Install washers (12) and screws (11) through terminal lugs (13) into circuit breaker (10).
4. **Inspect (TI).**

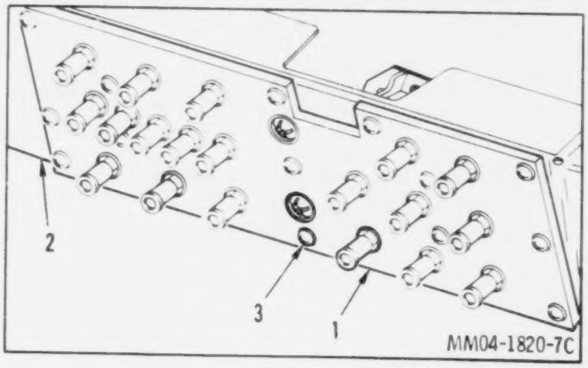


5. **Install cover (4) on panel (2).**
   - a. Position cover (4) over studs (7).
   - b. Install washers (6) and nuts (5) on studs (7) and screws (8) as required.



6. **Install edge lighted panel (1).** Install screws (3).
7. **Install pilot circuit breaker panel** (para 9-8-7).
8. **Refer to circuit breaker reference list and perform appropriate operational check** (TM 55-1520-238-T).

END OF TASK



9-8-6. PILOT CIRCUIT BREAKER PANEL REMOVAL 9-8-6

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

2. **Open six POWER circuit breakers on pilot aft circuit breaker panel.**

3. **Detach five connectors from power distribution box (1).**

   a. Detach connector P1 (2) from connector J1 (3).

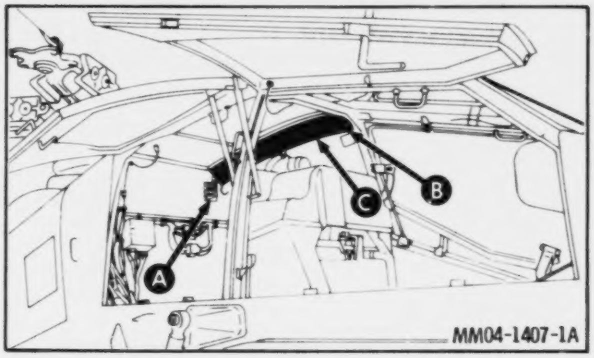
   b. Detach connector P2 (4) from connector J2 (5).

   c. Detach connector P3 (6) from connector J3 (7).

   d. Detach connector P4 (8) from connector J4 (9).

   e. Detach connector P5 (10) from connector J29 (11).

4. **Remove two harness clamps (12).** Remove two screws (13) and two washers (14) from clamps (12).



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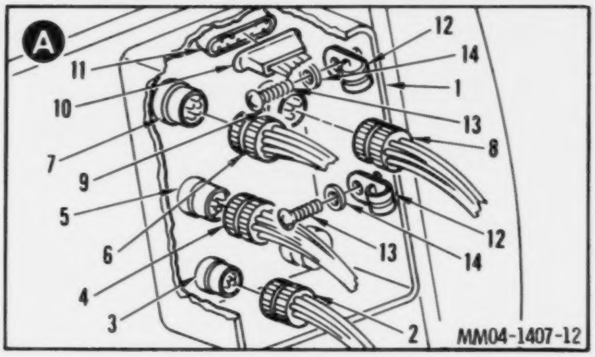

MM04-1407-12

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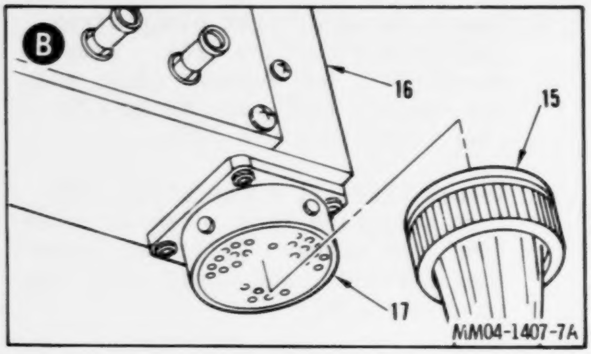
9-8-6. PILOT CIRCUIT BREAKER PANEL REMOVAL (cont) 9-8-6

5. **Detach connector P463 (15) from circuit breaker panel (16).** Detach connector P463 (15) from connector J1 (17).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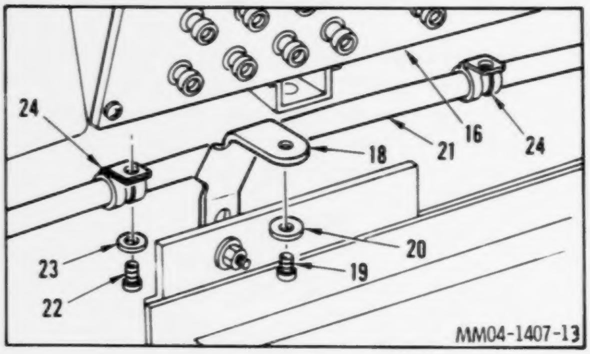
MM04-1407-7A

6. **Detach pilot left vertical glareshield mount bracket (18) from panel (16).** Remove screw (19) and washer (20) from bracket (18).

7. **Remove defog hose (21) from panel (16).** Remove two screws (22), washers (23), and clamps (24) from panel (16).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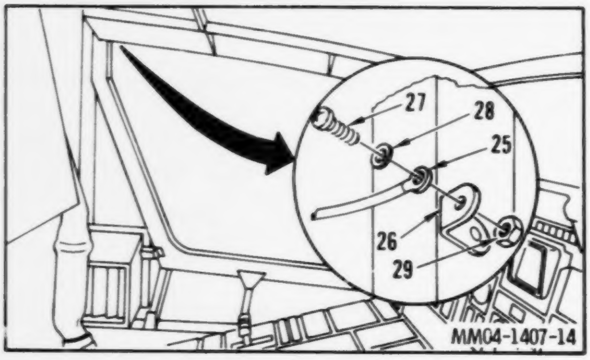
MM04-1407-13

8. **Detach circuit breaker panel bonding strap (25) from pilot station structure (26).** Remove screw (27), washer (28), and nut (29) from bonding strap (25).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MM04-1407-14

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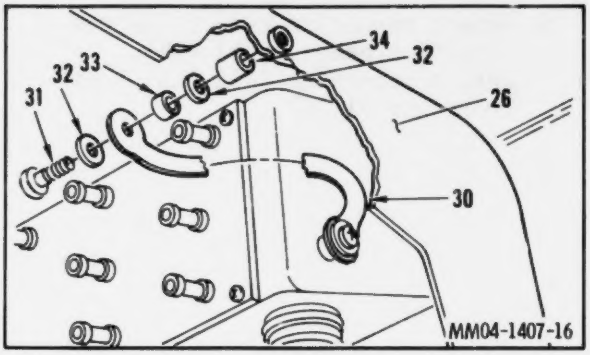
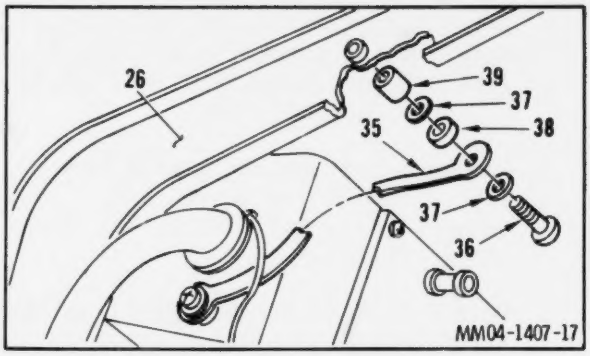
9-8-6. PILOT CIRCUIT BREAKER PANEL REMOVAL (cont) 9-8-6

9. **Remove forward/right hinge strap (30) from structure (26).** Remove screw (31), two washers (32), and two spacers (33), and strap (30) (34) from structure (26).



10. **Remove aft/left hinge strap (35) from structure (26).** Remove screw (36), two washers (37), two spacers (38) and (39), and strap (35) from structure (26).



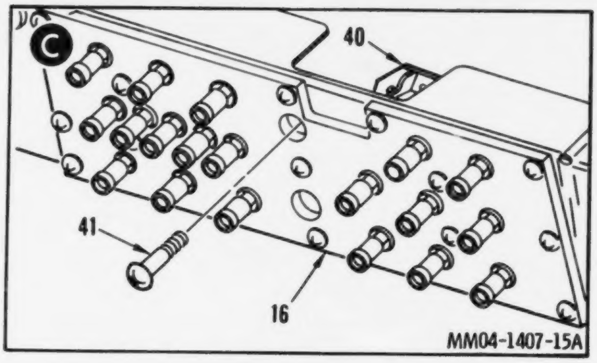
CAUTION

To prevent damage to transparent barrier or pilot glareshield, remove two aft screws first, then support forward end of panel while removing remaining two screws.

NOTE

Support panel while removing forward screws.

11. **Remove panel (16) from mounting brackets (40).**
    a. Remove two aft screws (41) from panel (16).
    b. Remove two forward screws (41) from panel (16).



B. **CLEANING**

Wipe circuit breaker panel mounting area with a clean rag.

C. **INSPECTION**

1. **Check panel mounting area for cracks, nicks, and damaged threads.**
2. **Check connectors for damage (TM 55-1500-323-24).**

END OF TASK

9-8-7. PILOT CIRCUIT BREAKER PANEL INSTALLATION 9-8-7

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

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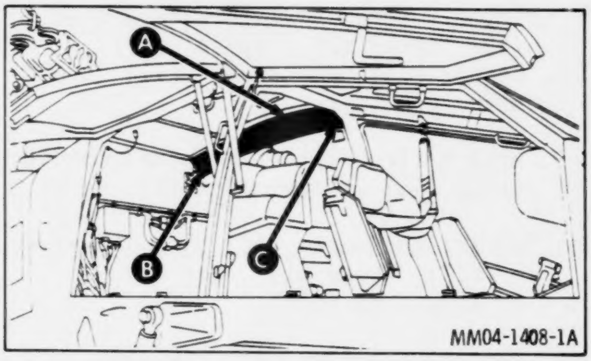
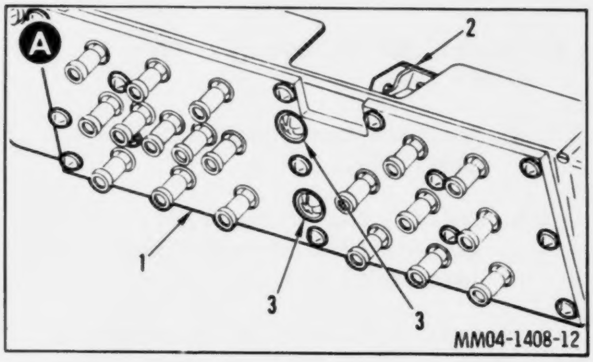
1. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**



2. **Install pilot circuit breaker panel (1) on mount (2).**

   a. Position panel (1) on mount (2).

   b. Install four screws (3).



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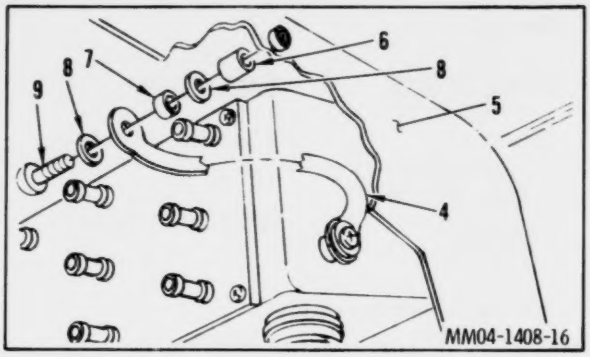
9-8-7. PILOT CIRCUIT BREAKER PANEL INSTALLATION (cont) 9-8-7

3. **Attach forward/right hinge strap (4) to pilot station structure (5).** Install screw (9) through washer (8), strap (4), spacer (7), washer (8), and spacer (6) into structure (5).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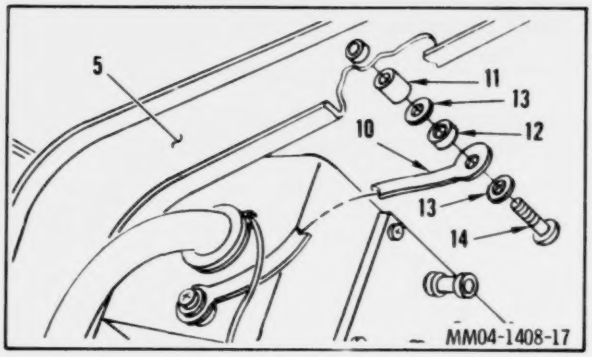
4. **Attach aft/left hinge strap (10) to pilot station structure (5).** Install screw (14) through washer (13), strap (10), spacer (12), washer (13), and spacer (11) into structure (5).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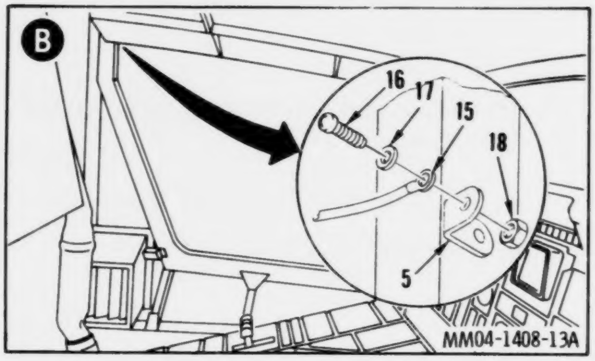
5. **Attach circuit breaker panel bonding strap (15) to structure (5).**

   a. Install screw (16) through washer (17), strap (15), and structure (5).

   b. Install nut (18) on screw (16).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MM04-1408-13A

6. **Install defog hose (19) on panel (1).**

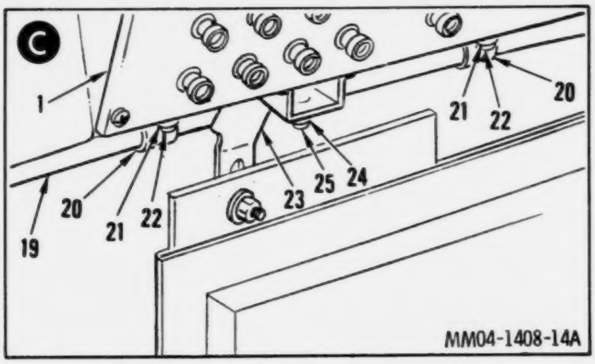
   a. Position two clamps (20) on panel (1).

   b. Install two screws (22), two washers (21) through clamps (20) into panel (1).

7. **Install left vertical glareshield mount bracket (23) on panel (1).**

   a. Position bracket (23) on panel (1).

   b. Install screw (25), washer (24) through bracket (23) into panel (1).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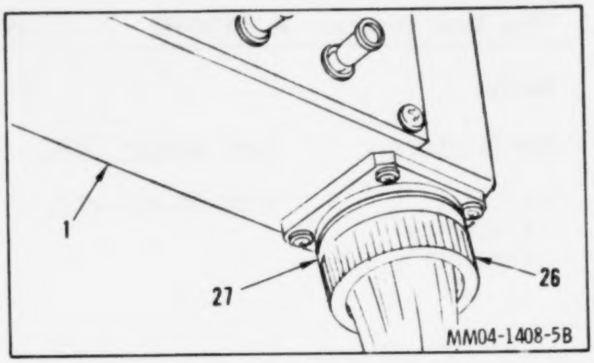
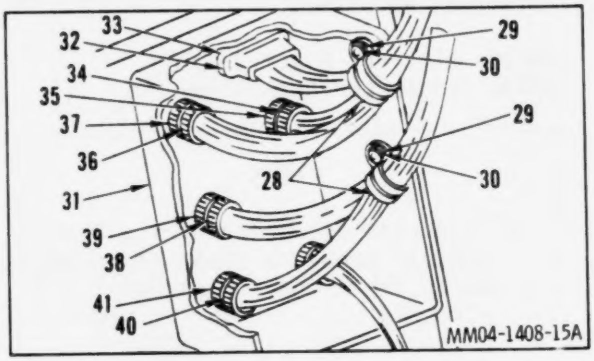
9-8-7. PILOT CIRCUIT BREAKER PANEL INSTALLATION (cont) 9-8-7

8. **Attach connector P463 (26) to circuit breaker panel (1).** Attach connector P463 (26) to connector J1 (27).





9. **Install two harness clamps (28).** Install two screws (30) and washers (29) through clamps (28).

10. **Attach five connectors in electrical power distribution box (31).**

    a. Attach connector P5 (32) to connector J29 (33).

    b. Attach connector P4 (34) to connector J4 (35).

    c. Attach connector P3 (36) to connector J3 (37).

    d. Attach connector P2 (38) to connector J2 (39).

    e. Attach connector P1 (40) to connector J1 (41).

11. **Perform electrical bonding check of aft/left hinge strap** (TM 55-1500-323-24). Resistance not to exceed 0.1 ohm. Use ohmmeter.

12. **Inspect (TI).**

13. **Perform AC power generation operational check** (TM 55-1520-238-T).

END OF TASK

9-8-8. CPG CIRCUIT BREAKER PANEL CIRCUIT BREAKERS (ATTACHED TO BUS BAR) REPLACEMENT 9-8-8

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

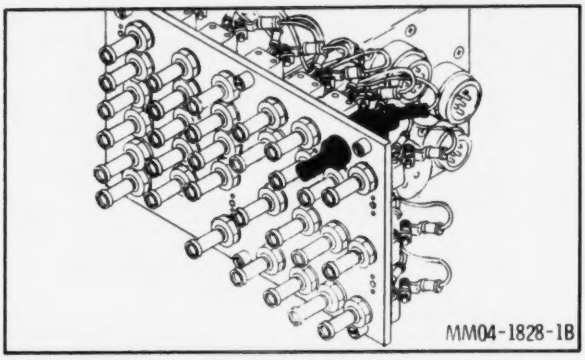
TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9-8-10	CPG circuit breaker panel (No. 1) removed
9-8-19	CPG circuit breaker panel (No. 1) edge lighted panel removed

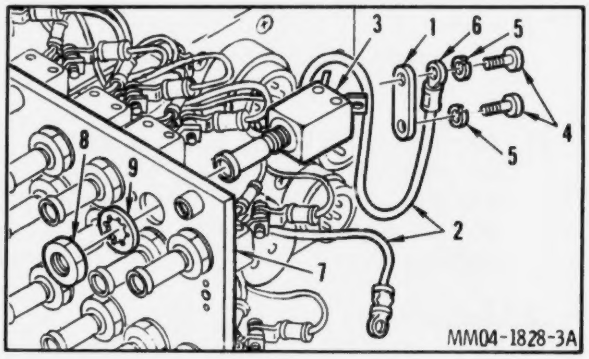
NOTE

- This task is typical for all circuit breakers attached to bus bar. The number of wires attached to individual circuit breakers will differ.
- Identify each wire and terminal during removal, for proper placement during installation.



A. REMOVAL

1. **Remove bus bar (1).** Disconnect wires (2) from circuit breaker (3).
   a. Identify wires (2).
   b. Remove screws (4), lock washers (5), and terminal lugs (6).
2. **Remove circuit breaker (3) from CPG circuit breaker panel No. 1 (7).** Remove nut (8) and washer (9).



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9-8-8. CPG CIRCUIT BREAKER PANEL CIRCUIT BREAKERS (ATTACHED TO BUS BAR) REPLACEMENT (cont)

B. CLEANING

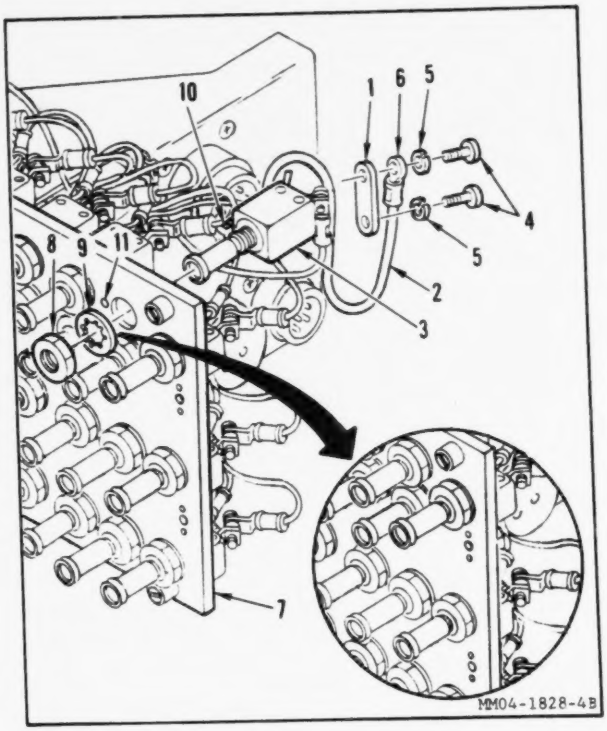
Wipe circuit breaker mounting area with a clean rag.

C. INSPECTION

1. Check wires for wear, cuts, breaks, and damaged terminal lugs (TM 55-1500-323-24).
2. Check bus bar for arcing burns and other damage.
3. Check circuit breaker panel for dust and other contamination. Remove contamination and dust.

D. INSTALLATION

1. Install circuit breaker (3) in panel (7).
    a. Insert circuit breaker (3) so tab (10) seats in locator hole (11).
    b. Install washer (9) and nut (8).
2. Attach identified wires (2) to circuit breaker (3). Install bus bar (1). Install screws (4) through washers (5),and terminal lugs (6).
3. Inspect (TI).
4. Install CPG circuit breaker panel No. 1 (para 9-8-10).
5. Install CPG circuit breaker panel No. 1 edge lighted panel (para 9-8-19).
6. Refer to circuit breaker reference list to perform appropriate operational check (TM 55-1520-238-T).



END OF TASK

9-8-9. CPG CIRCUIT BREAKER PANEL NO. 1 CIRCUIT BREAKERS (NOT ATTACHED TO BUS BAR) REPLACEMENT 9-8-9

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

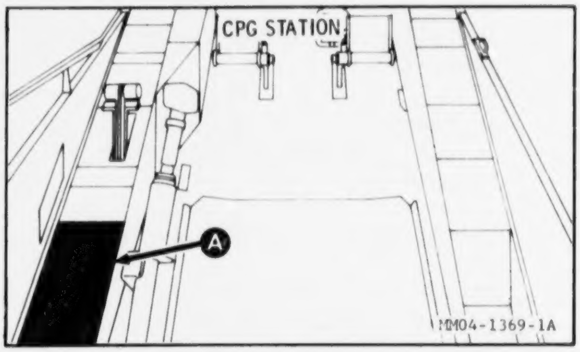
TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
9-8-10	CPG circuit breaker panel (No. 1) removed
9-8-19	CPG circuit breaker panel (No. 1) edge lighted panel removed

NOTE

This task is typical for all circuit breakers on CPG circuit breaker panel not attached to bus bars. The numbers of wires attached to the circuit breakers will differ.



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9-8-9. CPG CIRCUIT BREAKER PANEL NO. 1 CIRCUIT BREAKERS (NOT ATTACHED TO BUS BAR) REPLACEMENT (cont) 9-8-9

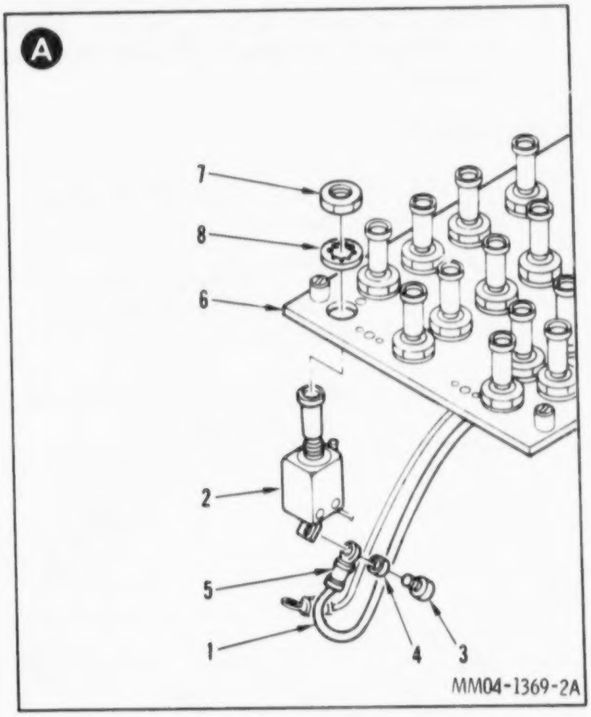
A. REMOVAL

1. Identify circuit breaker to be replaced.

NOTE

Identify each wire and terminal during removal, for proper placement during installation.

2. Detach wires (1) from circuit breaker (2).
   a. Identify wires (1).
   b. Remove screws (3), washers (4), and terminal lugs (5).
3. Remove circuit breaker (2) from CPG No. 1 circuit breaker panel (6). Remove nut (7) and washer (8).



B. CLEANING

Wipe circuit breaker mounting area with a clean rag.

C. INSPECTION

1. Check wires for wear, cuts, breaks, and damaged terminal lugs (TM 55-1500-323-24).
2. Check circuit breaker panel for dust and other contamination. Remove contamination and dust.

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9-8-9. CPG CIRCUIT BREAKER PANEL NO. 1 CIRCUIT BREAKERS (NOT ATTACHED TO BUS BAR) REPLACEMENT (cont) 9-8-9

D. INSTALLATION

1. **Install circuit breaker (2) in panel (6).**

    a. Insert circuit breaker (2) so tab (9) seats in locator hole (10).

    b. Install washer (8) and nut (7).

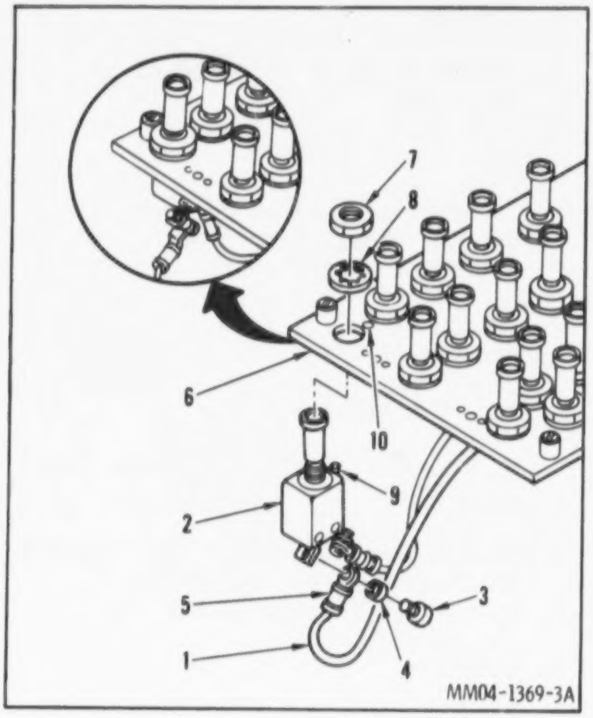
2. **Attach identified wires (1) to cirucit breaker (2).** Install screws (3) through washers (4) and terminal lugs (5).

3. **Inspect (TI).**

4. **Install CPG No. 1 circuit breaker panel** (para 9-8-10).

5. **Install CPG No. 1 circuit breaker panel No. 1 edge lighted panel** (para 9-8-19).

6. **Refer to circuit breaker reference list to perform appropriate operational check** (TM 55-1520-238-T).



END OF TASK

9-8-10. CPG CIRCUIT BREAKER PANEL NO. 1 REMOVAL/INSTALLATION 9-8-10

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

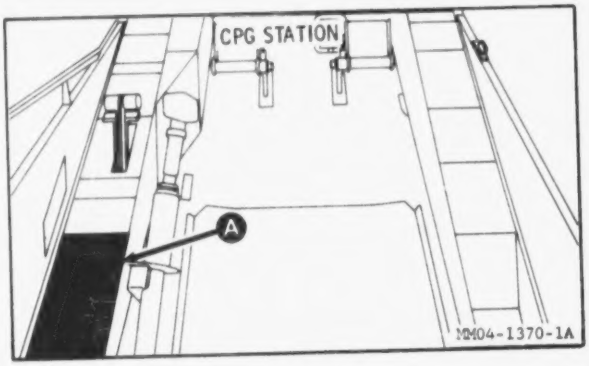
TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

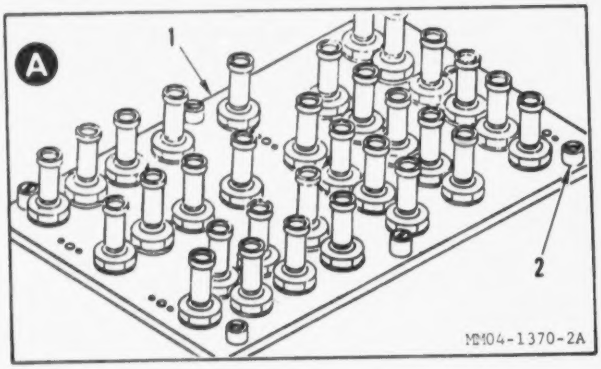
Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.
2. Open six POWER circuit breakers on pilot aft circuit breaker panel.
3. Enter CPG station (para 1-7-1). Observe all safety precautions.



4. Remove CPG circuit breaker panel No. 1 (1). Unlock six Camloc fasteners (2).



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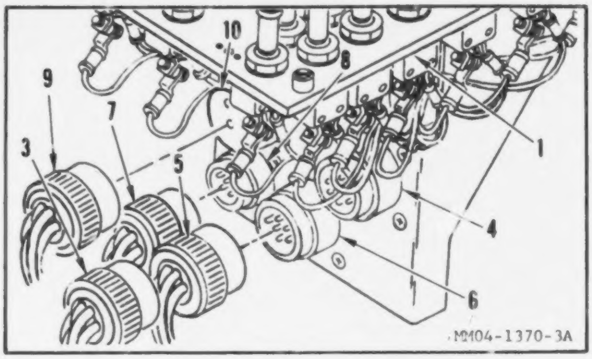
9-8-10. CPG CIRCUIT BREAKER PANEL NO. 1 REMOVAL/INSTALLATION (cont) 9-8-10

5. **Detach four connectors from panel (1).**
   - a. Detach connector P766 (3) from connector A77J1 (4).
   - b. Detach connector P767 (5) from connector A77J2 (6).
   - c. Detach connector P768 (7) from connector A77J3 (8).
   - d. Detach connector P769 (9) from connector A77J4 (10).



B. **CLEANING**

Wipe panel mounting area with a clean rag.

C. **INSPECTION**

1. **Check mounting area of panel for stripped or damaged threads.**
2. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).
3. **Check connector for bent pins or damaged threads** (TM 55-1500-323-24).
4. **Check circuit breaker panel for dust and other contamination.** Remove contamination and dust.

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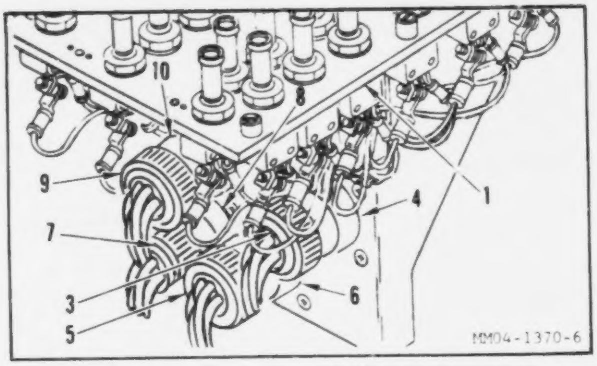
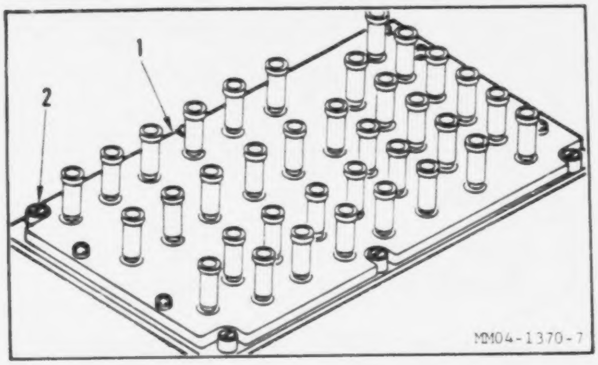
9-8-10. CPG CIRCUIT BREAKER PANEL NO. 1 REMOVAL/INSTALLATION (cont) 9-8-10

D. INSTALLATION

1. **Attach four connectors to CPG panel (1).**
   - a. Attach connector P766 (3) to connector A77J1 (4).
   - b. Attach connector P767 (5) to connector A77J2 (6).
   - c. Attach connector P768 (7) to connector A77J3 (8).
   - d. Attach connector P769 (9) to connector A77J4 (10).
2. **Inspect (TI).**
3. **Install panel (1).** Lock six Camloc fasteners (2).
4. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.
5. **Refer to circuit breaker reference list to perform appropriate operational check** (TM 55-1520-238-T).





END OF TASK

9-8-11. CPG CIRCUIT BREAKER PANEL NO. 2 REMOVAL/INSTALLATION 9-8-11

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

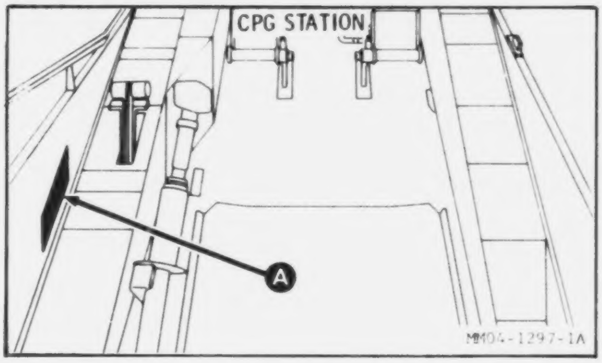
TM 55-1520-238-T
TM 55-1500-323-24

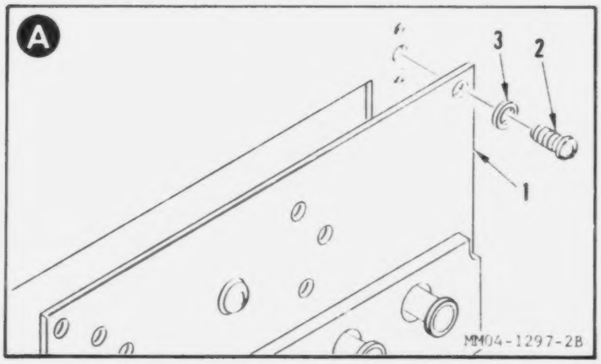
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
9-6-10	CPG INTR LT panel removed

A. REMOVAL

1. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**
2. **Open six POWER circuit breakers on pilot aft circuit breaker panel.**
3. **Enter CPG station** (para 1-7-1). **Observe all safety precautions.**
4. **Remove CPG circuit breaker panel No. 2 (1).** Remove six screws (2) and washers (3).





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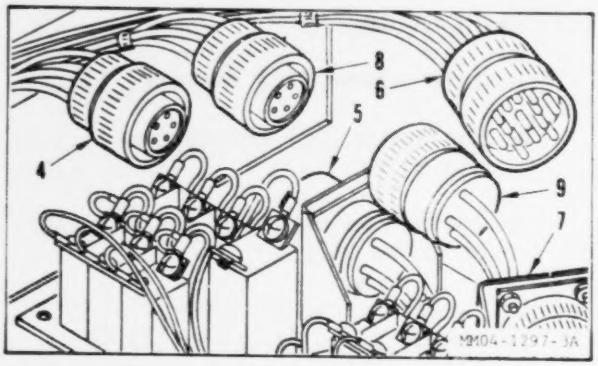
9-8-11. CPG CIRCUIT BREAKER PANEL NO. 2 REMOVAL/INSTALLATION (cont) 9-8-11

5. **Detach four connectors from CPG panel (1).**

   a. Detach connector P763 (4) from connector A97J2 (5).

   b. Detach connector P761 (6) from connector A97J1 (7).

   c. Detach connector A97P1 (8) from connector J764 (9).

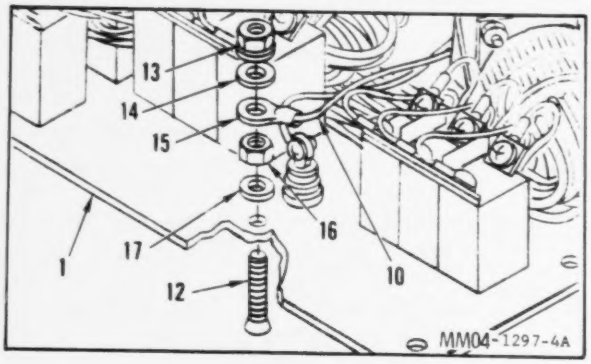


6. **Remove jumper (10) from panel (1).**

   a. Hold screw (12).

   b. Remove nut (13), washer (14), and terminal lug (15).

   c. Remove nut (16), washer (17), and screw (12).



B. CLEANING

Wipe panel mounting area with a clean rag.

C. INSPECTION

1. **Check mounting area of panel for stripped or damaged threads.**
2. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).
3. **Check connector for bent pins or damaged threads** (TM 55-1500-323-24).
4. **Check circuit breaker panel for dust and other contamination.** Remove contamination and dust if found.

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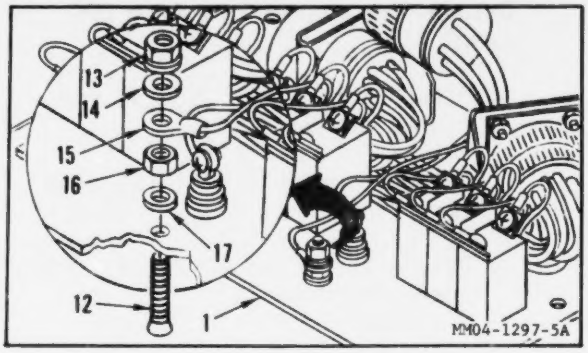
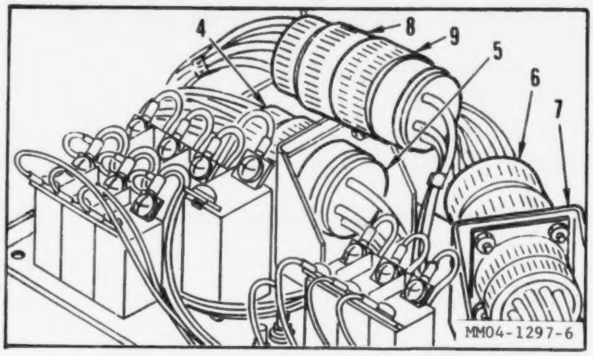
D. INSTALLATION

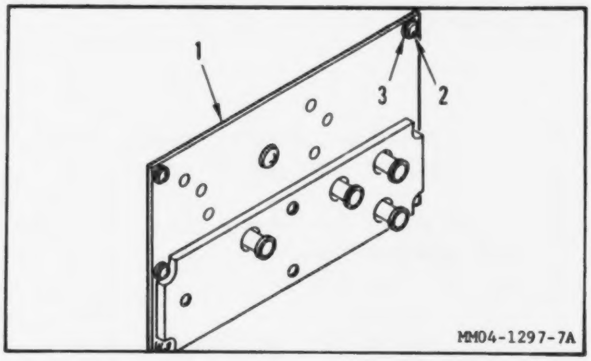
1. **Install jumper (10) on panel (1).**
   - a. Put screw (12) through panel (1) and hold.
   - b. Install washer (17) and nut (16) on screw (12).
   - c. Install terminal lug (15), washer (14), and nut (13) on screw (12).



2. **Attach four connectors from CPG panel (1).**
   - a. Attach connector A97P1 (8) to connector J764 (9).
   - b. Attach connector P761 (6) to connector A97J1 (7).
   - c. Attach connector P763 (4) to connector A97J2 (5).



3. Inspect TI.
4. **Install panel (1).** Install six washers (3) and screws (2).



5. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.
6. **Refer to circuit breaker reference list to perform appropriate operational check** (TM 55-1520-238-T).

END OF TASK

9-8-12. CPG CIRCUIT BREAKER PANEL NO. 2 CIRCUIT BREAKER REPLACEMENT

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

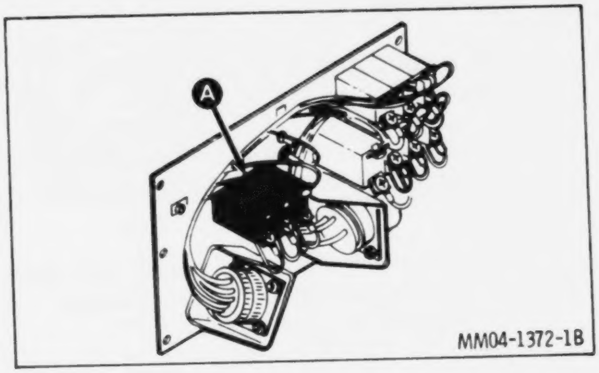
TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
9-8-11	CPG circuit breaker panel (No. 2) removed
9-8-20	CPG circuit breaker panel (No. 2) edge lighted panel removed

NOTE

- This task is typical for all circuit breakers on CPG circuit breaker panel No. 2. The numbers of wires attached to the circuit breakers will differ.
- Identify each wire and terminal during removal for proper placement during installation.



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9-8-12. CPG CIRCUIT BREAKER PANEL NO. 2 CIRCUIT BREAKER REPLACEMENT (cont) 9-8-12

A. REMOVAL

1. Detach wires (1) from circuit breaker (2).

   a. Identify wires (1).

   b. Remove screws (3) and washers (4).

2. Remove circuit breaker (2) from CPG circuit breaker panel No. 2 (5). Remove nut (6) and washer (7).

B. CLEANING

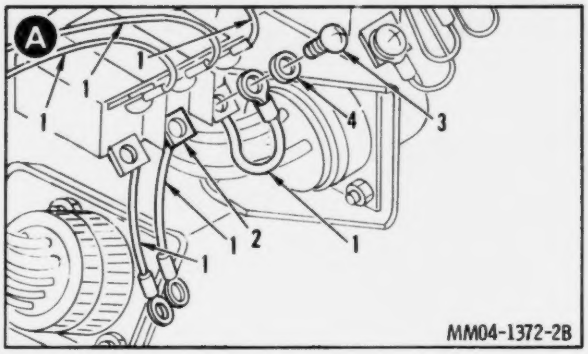
Wipe circuit breaker mounting area with a clean rag.

C. INSPECTION

1. Check mounting area of circuit breaker for nicks and dents.

2. Check wires for wear, cuts, breaks, and damaged terminal lugs (TM 55-1500-323-24).

3. Check circuit breaker panel for dust and other contamination. Remove contamination and dust.



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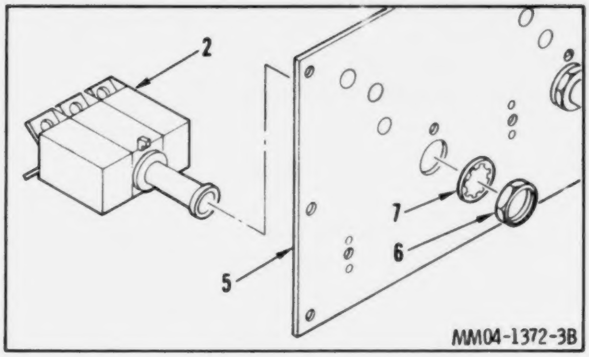

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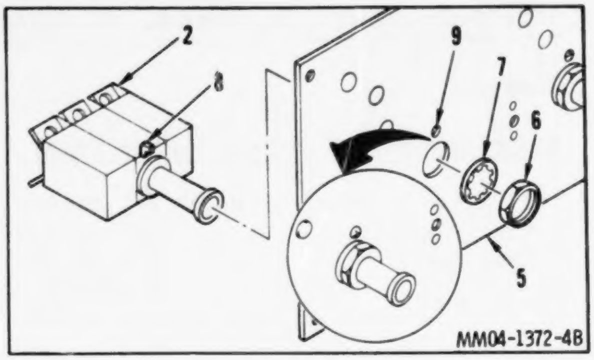
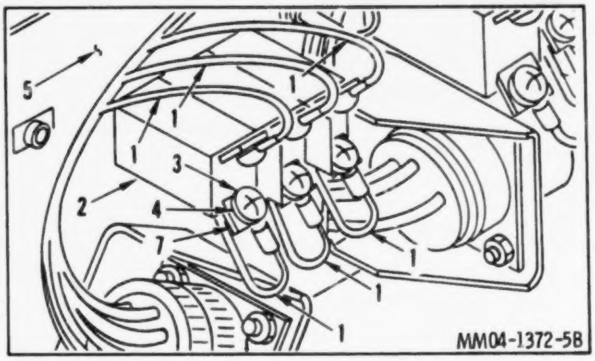
9-8-12. CPG CIRCUIT BREAKER PANEL NO. 2 CIRCUIT BREAKER REPLACEMENT (cont) 9-8-12

D. INSTALLATION

1. **Install circuit breaker (2) in panel (5).**
   - a. Insert circuit breaker (2) so tab (8) seats in locator hole (9).
   - b. Install washer (7) and nut (6).



2. **Attach identified wires (1) to circuit breaker (2).** Install screws (3) through washers (4) and wires (1) into circuit breaker (2).
3. **Inspect (TI).**
4. **Install panel** (para 9-8-11).
5. **Install CPG circuit breaker panel No. 2 edge lighted panel** (para 9-8-20).
6. **Refer to circuit breaker reference list to perform appropriate operational check** (TM 55-1520-238-23).



END OF TASK

9-8-13. PILOT TAILWHEEL LOCK SWITCH REMOVAL/INSTALLATION 9-8-13

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

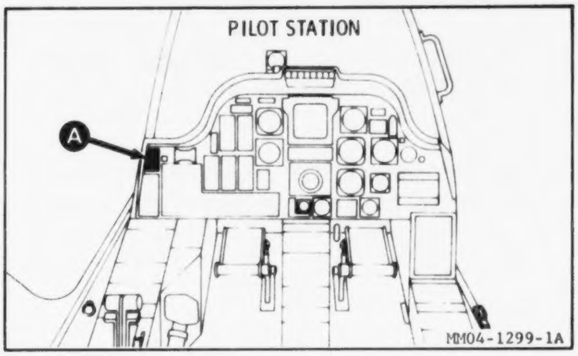
68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T
TM 9-1230-476-20-1
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
TM 9-1230-476-20-1	Pilot fire control panel removed

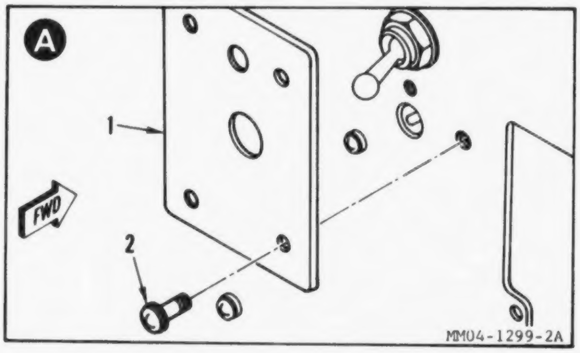


A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open six POWER circuit breakers on pilot aft circuit breaker panel.

3. Remove edge lighted panel (1). Remove four screws (2).



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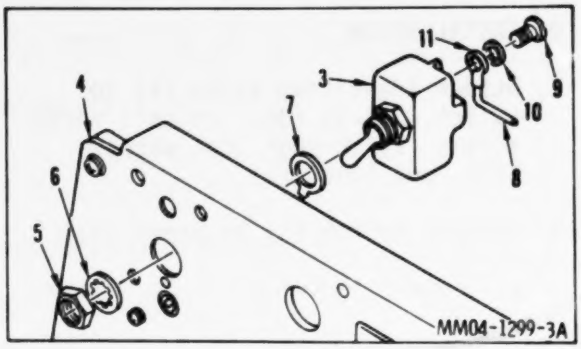
9-8-13. PILOT TAILWHEEL LOCK SWITCH REMOVAL/INSTALLATION (cont) 9-8-13



4. **Remove tailwheel lock switch A331-S1 (3) from pilot instrument panel (4).**

   a. Remove nut (5) and lock washer (6).

   b. Remove switch (3) and lockring (7) from panel (4).

   NOTE

   Identify each wire and terminal during removal for proper placement during installation.

5. **Detach wires (8) from switch A331-S1 (3).**

   a. Identify wires (8).

   b. Remove three screws (9), lock washers (10), and terminal lugs (11).

B. **CLEANING**

   Clean indicating panel and switch mounting surface (para 1-5-36).

C. **INSPECTION**

   Check wires for cuts, cracks, wear, and damaged terminal lugs (TM 55-1500-323-24).

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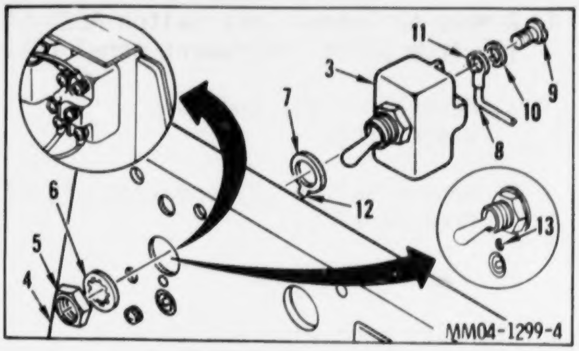
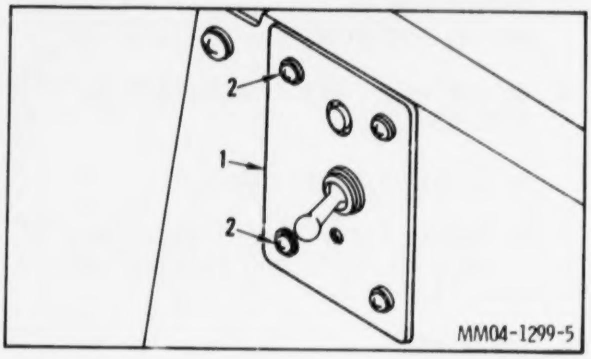
9-8-13. PILOT TAILWHEEL LOCK SWITCH REMOVAL/INSTALLATION (cont) 9-8-13





D. INSTALLATION

1. **Attach identified wires (8) to switch A331-S1 (3).** Install three screws (9) through lock washers (10), and lugs (11).

2. **Install switch (3) in panel (4).**

   a. Install lockring (7) on switch (3).

   b. Insert switch (3) so tab (12) on lockring (7) seats in hole (13).

   c. Install lock washer (6) and nut (5).

3. **Inspect (TI).**

4. **Install edge lighted panel (1).** Install four screws (2).

5. **Install pilot FIRE CONTROL panel** (TM 9-1230-476-20-1).

6. **Perform utility hydraulic system operational check** (TM 55-1520-238-T).

END OF TASK

9-8-14. PILOT EMERGENCY HYDRAULIC SWITCH REMOVAL/INSTALLATION 9-8-14

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

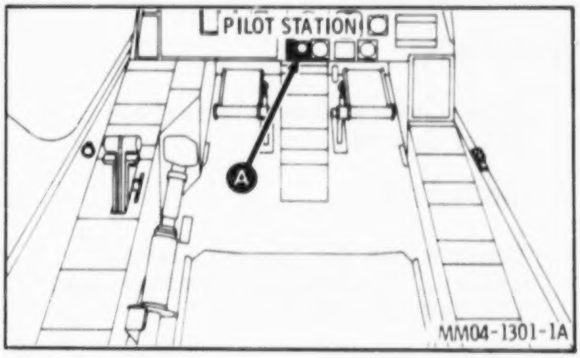
TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
8-4-3	Horizontal situation indicator removed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.
2. Open EMERG HYD and LT PRI circuit breakers on pilot center circuit breaker panel.
3. Remove EMER HYD edge lighted panel (1). Remove two screws (2).



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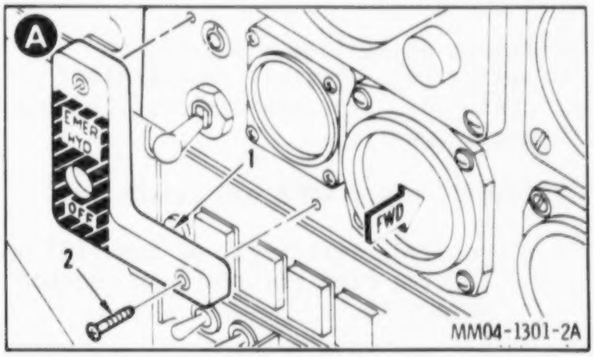

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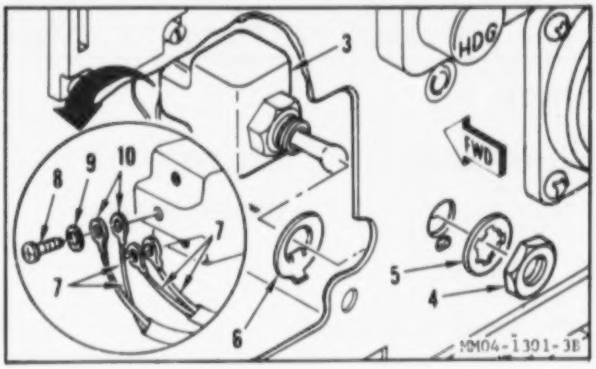
9-8-14. PILOT EMERGENCY HYDRAULIC SWITCH REMOVAL/INSTALLATION (cont) 9-8-14

4. **Remove pilot EMER HYD switch (3).** Remove nut (4), lock washer (5), and locking ring (6).



NOTE

Identify each wire and terminal during removal for proper placement during installation.

5. **Detach wires (7) from switch (3).**

   a. Identify wires (7).

   b. Remove two screws (8), lock washers (9), and terminal lugs (10).

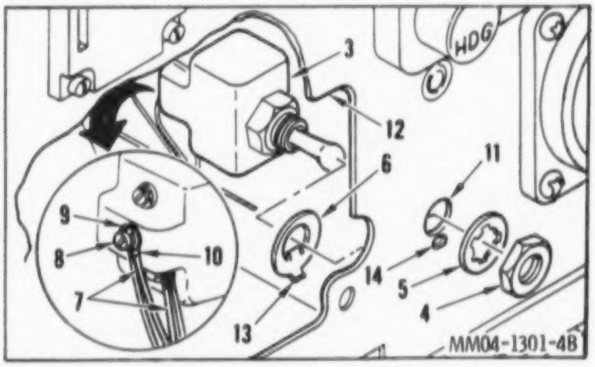
B. **CLEANING**

Clean switch mounting surface (para 1-5-36).

C. **INSPECTION**

Check wires for breaks, cuts, cracks, and damaged terminal lugs (TM 55-1500-323-24).

D. **INSTALLATION**



1. **Attach identified wires (7) to switch (3).** Install two terminal lugs (10), two lock washers (9), and two screws (8).

2. **Install pilot EMER HYD switch (3).**

   a. Position switch (3) so tab (13) on locking ring (6) seats in locator hole (14).

   b. Install lock washer (5) and nut (4).

3. **Inspect (TI).**

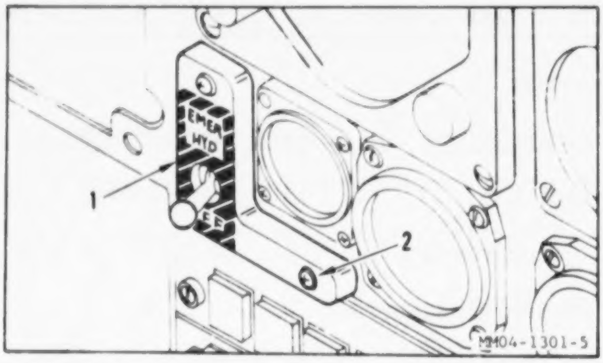
GO TO NEXT PAGE

9-8-14. PILOT EMERGENCY HYDRAULIC SWITCH REMOVAL/INSTALLATION (cont) 9-8-14

4. **Install EMER HYD edge lighted panel (1).** Install two screws (2).

5. **Install horizontal situation indicator** (para 8-4-3).

6. **Perform utility hydraulic system operational check** (TM 55-1520-238-T).



END OF TASK

9-8-15. PILOT CIRCUIT BREAKER PANEL EDGE LT PNL ON/OFF SWITCH REPLACEMENT 9-8-15

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

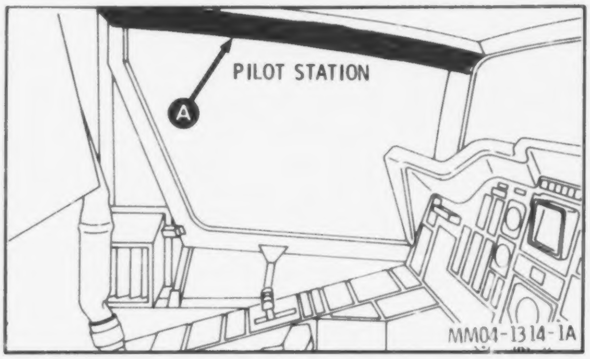
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

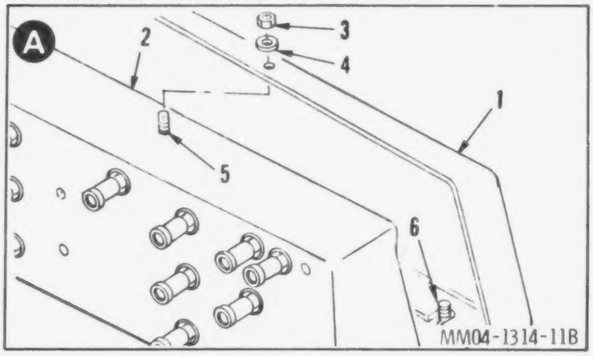
References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
9-8-6	Pilot circuit breaker panel removed





A. REMOVAL

1. **Remove back cover (1) from circuit breaker panel (2).**
   - a. Remove nuts (3) and washers (4) from studs (5).
   - b. Remove screws (6) as required.

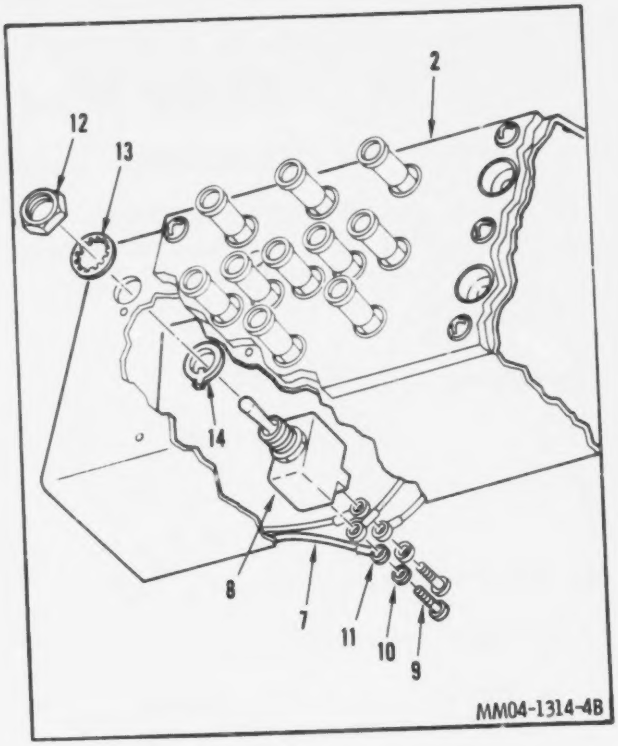
GO TO NEXT PAGE

9-8-15. PILOT CIRCUIT BREAKER PANEL EDGE LT PNL ON/OFF SWITCH REPLACEMENT (cont)

NOTE

Identify each wire and terminal during removal for proper placement during installation.

2. **Detach wires (7) from switch (8).**
   a. Identify wires (7).
   b. Remove two screws (9), washers (10), and terminal lugs (11).
3. **Remove switch (8) from pilot circuit breaker panel (2).**
   a. Remove nut (12) and washer (13).
   b. Remove switch (8) and lockring (14).



B. CLEANING

Wipe circuit breaker mounting area with a clean rag.

C. INSPECTION

Check wires for wear, cuts, breaks, and damaged terminal lugs (TM 55-1500-323-24).

GO TO NEXT PAGE

9-8-15. PILOT CIRCUIT BREAKER PANEL EDGE LT PNL ON/OFF SWITCH REPLACEMENT (cont) 9-8-15

D. INSTALLATION

1. **Install switch (8) on panel (2).**

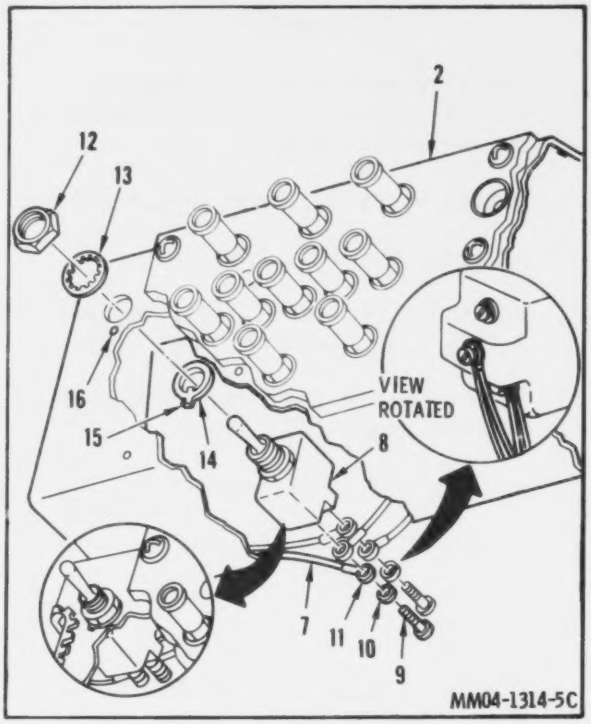
   a. Install lockring (14) on switch (8).

   b. Position switch (8) so tab (15) on lockring (14) seats in locator hole (16).

   c. Install nut (12) and washer (13).

2. **Attach identified wires (7) to switch S213 (8).** Install two screws (9) through two washers (10) and four lugs (11) into circuit breaker (8).

3. **Inspect (TI).**



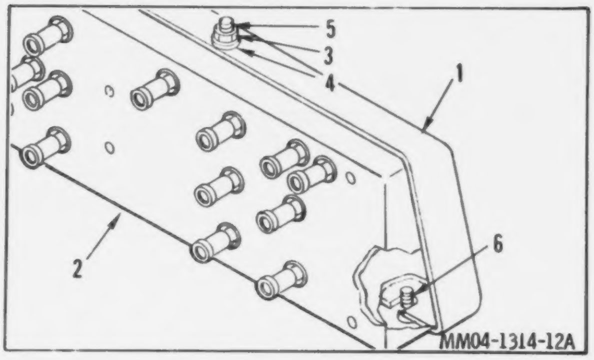
4. **Install cover (1) on panel (2).**

   a. Position cover (1) over studs (5).

   b. Install screws (6), washers (4), and nuts (3), as necessary.

5. **Install pilot circuit breaker panel (para 9-8-6).**

6. **Perform circuit breaker panel edge light operational check (TM 55-1520-238-T).**



END OF TASK

9-8-16. PILOT ELEC PWR EDGE LIGHTED PANEL REPLACEMENT 9-8-16

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

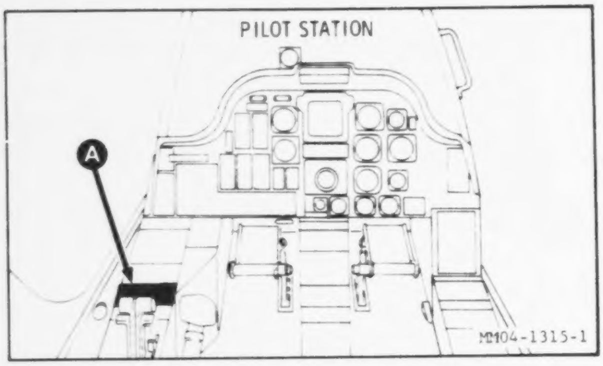
1. Enter pilot station (para 1-7-1). Observe all safety precautions.
2. Open LT PRI circuit breaker on pilot center circuit breaker panel.
3. Remove edge lighted panel (1) from pilot ELEC PWR panel (2). Remove three screws (3).

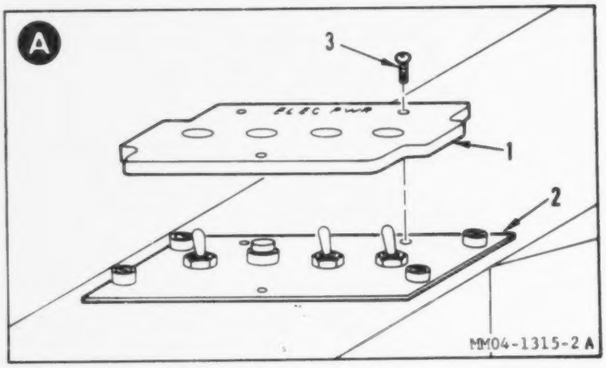
B. CLEANING

Wipe panel mounting surface with a clean rag.

C. INSPECTION

Check mounting surface for nicks, dents, and damaged or stripped threads. Thread damage not to exceed 50 percent of one thread.





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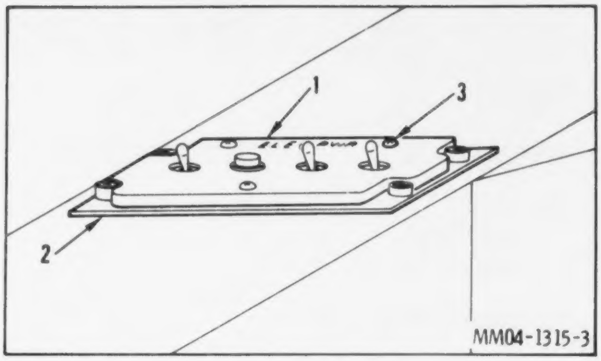
9-8-16. PILOT ELEC PWR EDGE LIGHTED PANEL REPLACEMENT (cont) 9-8-16

D. INSTALLATION



1. Install panel (1) on pilot panel (2). Install three screws (3).

2. Perform AC power generation operational check (TM 55-1520-238-T).

END OF TASK

9-8-17. ELECTRICAL TEST PANEL CIRCUIT BREAKER REPLACEMENT 9-8-17

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

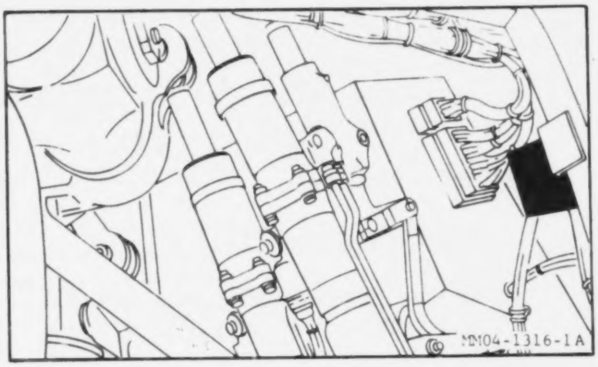
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panel R200 removed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Open six POWER circuit breakers on pilot aft circuit breaker panel.

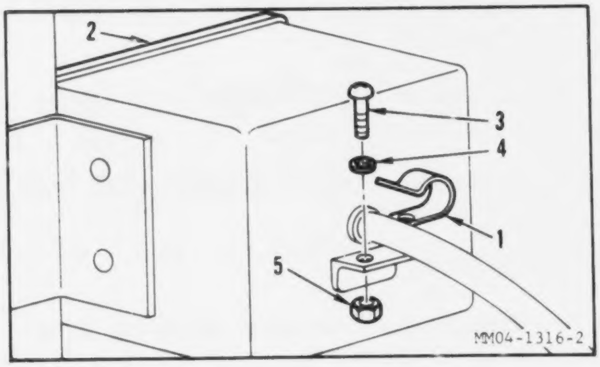


3. Remove wire clamp (1) from rear of electrical test panel (2).

   a. Hold screw (3).

   b. Remove nut (5).

   c. Remove screw (3), washer (4), and clamp (1).



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9-8-17. ELECTRICAL TEST PANEL CIRCUIT BREAKER REPLACEMENT (cont) 9-8-17

4. **Remove electrical test panel cover (6).** Remove four screws (7) and four washers (8).

5. **Identify circuit breaker to be removed.**

NOTE

- The **AC ELEC UTIL PWR** circuit breaker has seven wires attached. The **DC ELEC UTIL PWR** circuit breaker and the **NITROGEN INERT** circuit breaker have two wires attached.
- Identify each wire and terminal during removal, for proper placement during installation.
- This task is typical for all three circuit breakers.

6. **Detach wires (9).**

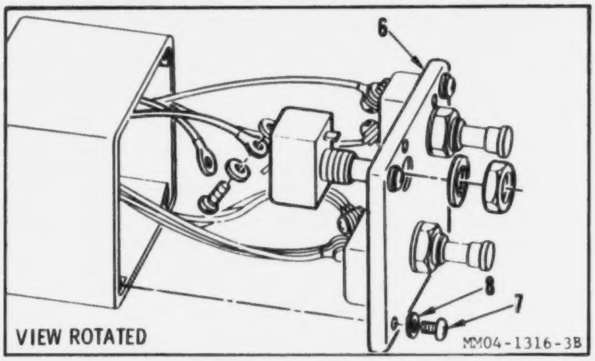
   a. Identify wires (9).

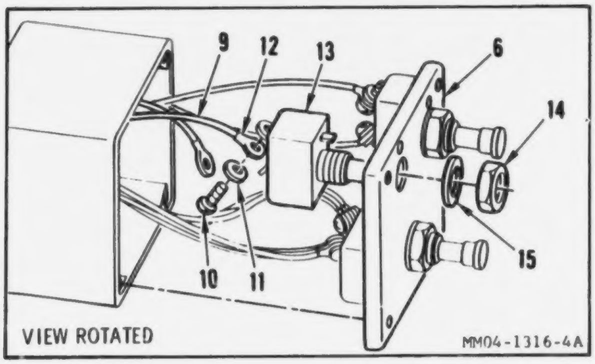
   b. Remove screws (10), washers (11), and terminal lugs (12).

7. **Remove circuit breaker (13) from cover (6).**

   a. Remove nut (14) and lock washer (15).

   b. Remove circuit breaker (13) from cover (6).





B. **CLEANING**

Wipe circuit breaker mounting area with a clean rag.

C. **INSPECTION**

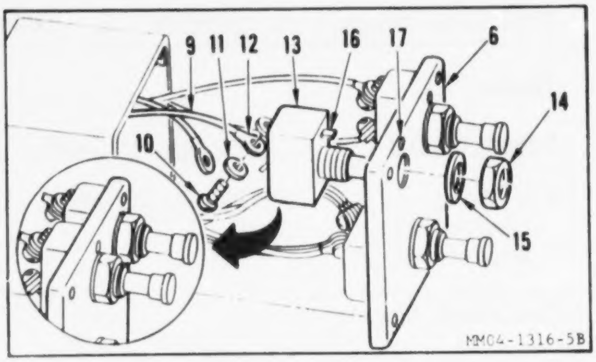
Check wires for wear, breaks, cracks, and damaged terminal lugs (TM 55-1500-323-24).

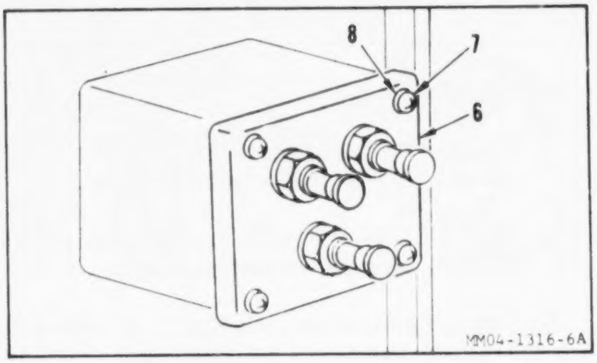
GO TO NEXT PAGE

9-8-17. ELECTRICAL TEST PANEL CIRCUIT BREAKER REPLACEMENT (cont) 9-8-17

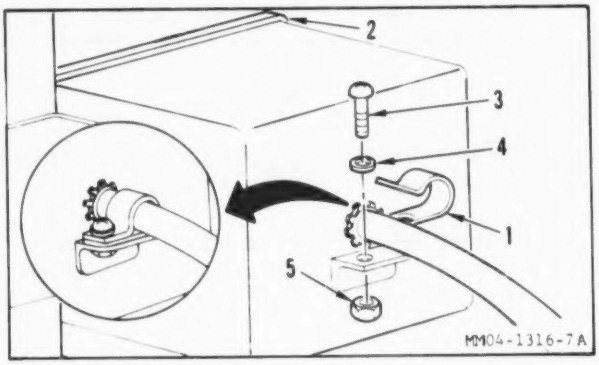
D. INSTALLATION

1. **Install circuit breaker (13) in cover (6).**
   a. Position circuit breaker so that tab (16) seats in locator hole (17).
   b. Install lock washer (15) and nut (14).
2. **Attach wires (9).** Install identified terminal lugs (12), washers (11), and screws (10).
3. **Inspect (TI).**
4. **Install cover (6).** Install four screws (7) and washers (8)





5. **Install wire clamp (1) on rear of panel (2).** Install screw (3), washer (4), and nut (5).
6. **Inspect (TI).**
7. **Secure access panel R200** (para 2-2-2).
8. **Refer to circuit breaker reference list to perform appropriate operational check** (TM 55-1520-238-T).



END OF TASK

9-8-18. PILOT CIRCUIT BREAKER EDGE LIGHTED PANEL REPLACEMENT 9-8-18

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

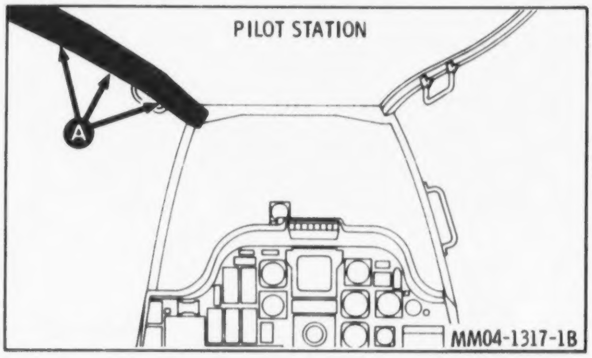
A. REMOVAL

1. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**
2. **Open LT PRI circuit breaker on pilot center circuit breaker panel.**
3. **Identify forward, center, or aft edge lighted panel to be removed.** Forward and aft panels have six screws each. The center panel has five screws.

NOTE

Unless otherwise noted, tasks apply to all edge lighted panels.

4. **Remove edge lighted panel (1) on circuit breaker panel (2).** Remove screws (3).



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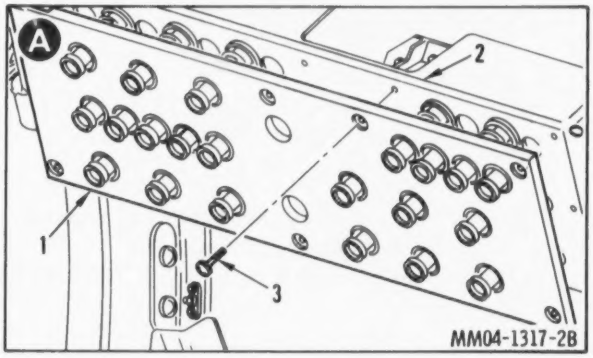

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9-8-18. PILOT CIRCUIT BREAKER EDGE LIGHTED PANEL REPLACEMENT (cont)

B. CLEANING

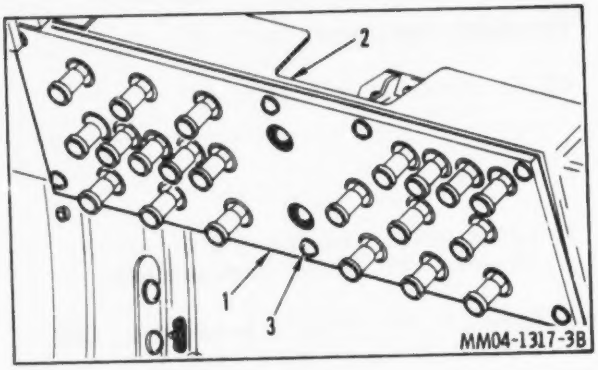
Wipe panel mounting surface with a clean rag.

C. INSPECTION

Check panel for cracks, nicks, or dents. No cracks allowed. Touchup nicks and dents.

D. INSTALLATION

1. Install panel (1) on panel (2). Install screws (3).
2. Perform circuit breaker edge light panel operational check (TM 55-1520-238-T).



END OF TASK

9-8-19. CPG CIRCUIT BREAKER NO. 1 EDGE LIGHTED PANEL REPLACEMENT 9-8-19

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

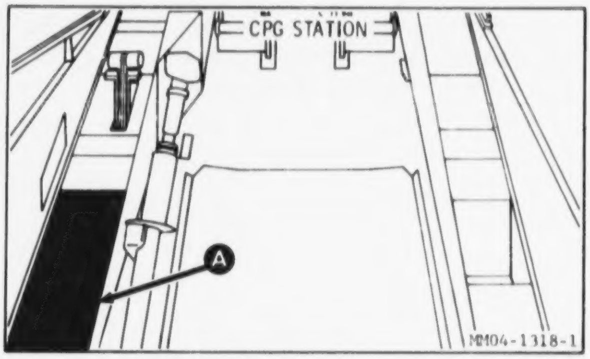
1. Enter pilot station (para 1-7-1). Observe all safety precautions.
2. Open LT PRI circuit breaker on CPG circuit breaker panel No. 1.
3. Remove edge lighted panel (1) from CPG circuit breaker panel No. 1 (2). Remove five screws (3).

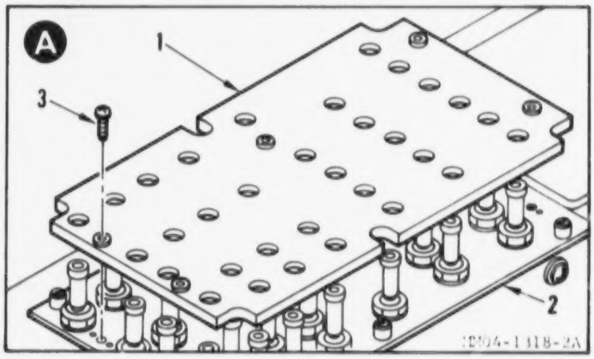
B. CLEANING

Wipe mounting surface of panel with a clean rag.

C. INSPECTION

Check panel for cracks, nicks, or dents. No cracks allowed. Nicks and dents touch up.





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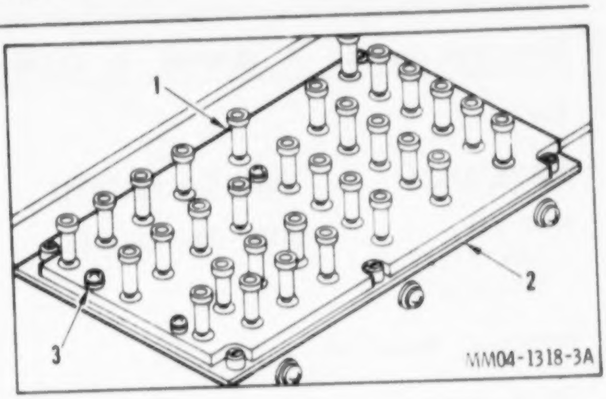
9-8-19. CPG CIRCUIT BREAKER NO. 1 EDGE LIGHTED PANEL REPLACEMENT (cont)

D. INSTALLATION

1. **Install panel (1) on panel (2).** Install five screws (3).
2. **Perform circuit breaker edge light panel operational check** (TM 55-1520-238-T).



END OF TASK

9-8-20. CPG CIRCUIT BREAKER NO. 2 EDGE LIGHTED PANEL REPLACEMENT 9-8-20

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

68F10 Aircraft Electrician

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

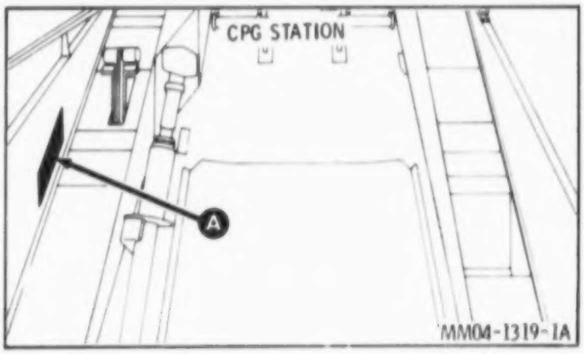
1. Enter pilot station (para 1-7-1). Observe all safety precautions.
2. Open PRI LT circuit breaker on CPG circuit breaker panel No. 1.
3. Remove edge lighted panel (1) from CPG circuit breaker panel No. 2 (2). Remove four screws (3).

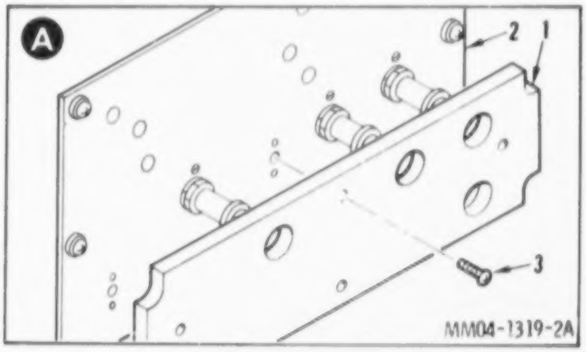
B. CLEANING

Wipe panel mounting surface with a clean rag.

C. INSPECTION

Check panel for cracks, nicks, or dents. No cracks allowed. Nicks and dents touch up.





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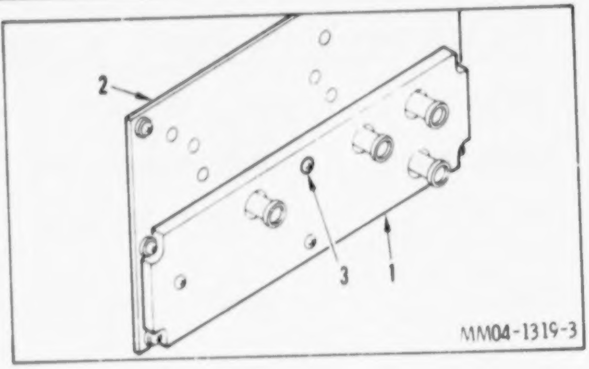
9-8-20. CPG CIRCUIT BREAKER NO. 2 EDGE LIGHTED PANEL REPLACEMENT (cont)

D. INSTALLATION

1. **Install panel (1) on panel (2).** Install four screws (3).

2. **Perform circuit breaker edge light panel operational check** (TM 55-1520-238-T).



END OF TASK

9-8-21. AIR TURBINE STARTER SWITCH REMOVAL/INSTALLATION 9-8-21

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

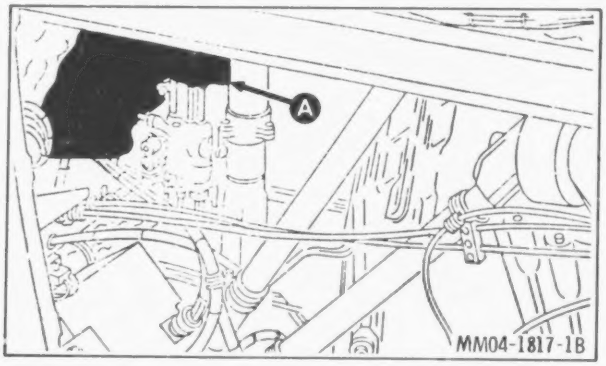
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panel L200 removed



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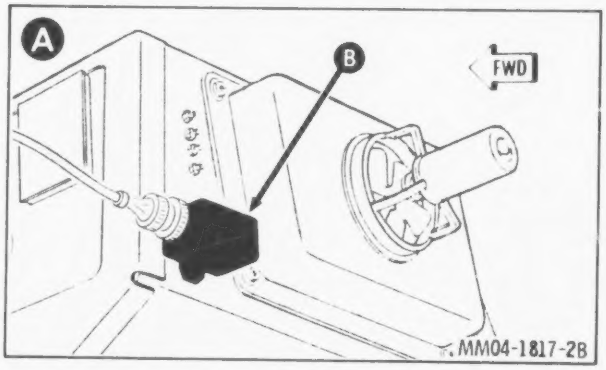

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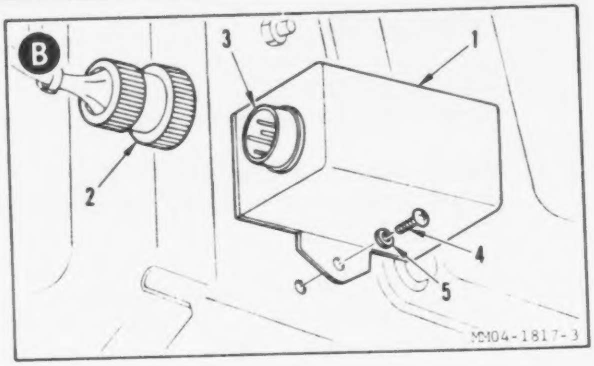
9-8-21. AIR TURBINE STARTER SWITCH REMOVAL/INSTALLATION (cont)



A. REMOVAL

1. Detach connector from air turbine starter switch (1). Detach connector P64 (2) from connector A5J1 (3).
2. Remove switch (1). Remove two screws (4) and washers (5).

B. CLEANING

Clean all removed parts, attaching parts, and mounting surfaces (para 1-5-36).

C. INSPECTION

1. Check mounting surface for stripped or damaged threads not to exceed 50 percent of one thread.
2. Check connector for cracks, broken connections, bent pins, or damaged threads. No cracks allowed. Thread damage not to exceed 50 percent of one thread.

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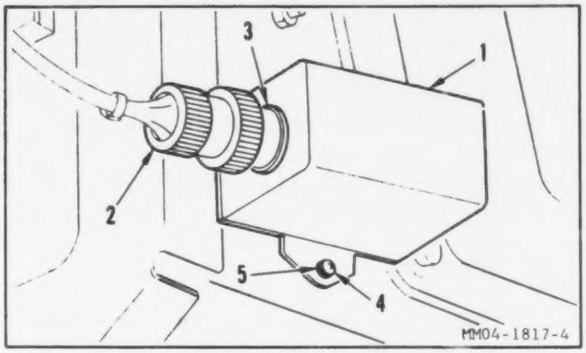
9-8-21. AIR TURBINE STARTER SWITCH REMOVAL/INSTALLATION (cont) 9-8-21

D. INSTALLATION



1. **Install switch (1).** Install two screws (4) and washers (5).
2. **Attach connector to switch (1).** Attach connector P64 (2) to connector A5J1 (3).
3. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.
4. **Inspect (TI).**
5. **Secure access panel L200** (para 2-2-2).
6. **Perform power plants operational check engine 1 or engine 2** (TM 55-1520-238-T).

END OF TASK

9-8-22. STABILATOR AIRSPEED TRANSDUCER REMOVAL/INSTALLATION 9-8-22

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Materials/Parts:

(E28) Compound, Sealing

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

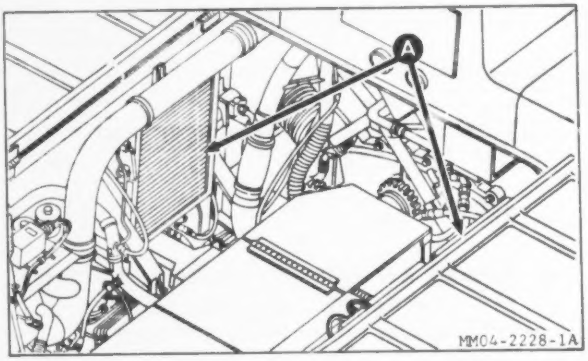
TM 55-1500-204-25/1
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors T250L, T250R, T290L, T290R, and L325 opened

NOTE

This task is typical for No. 1 and/or No. 2 airspeed transducers.



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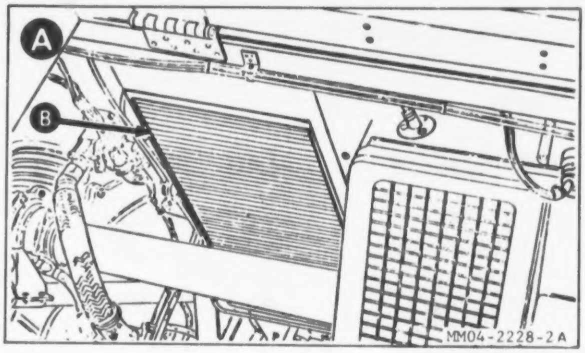
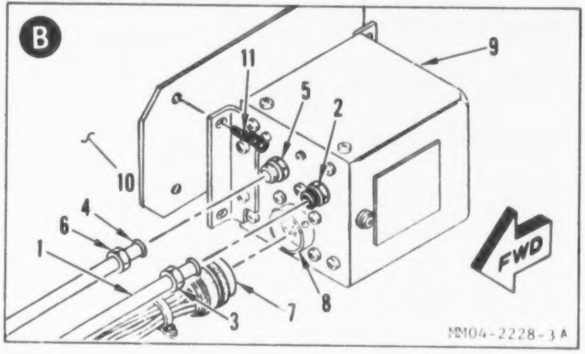
9-8-22. STABILATOR AIRSPEED TRANSDUCER REMOVAL/INSTALLATION (cont) 9-8-22





A. REMOVAL

1. **Disconnect static line (1).**

   a. Hold union (2).

   b. Remove nut (3) from union (2).

2. **Disconnect pressure line (4).**

   a. Hold union (5).

   b. Remove nut (6) from union (5).

3. **Detach connector P983 or P984 (7) from connector MT17J1 or MT18J1 (8).**

4. **Remove airspeed transducer (9) from airframe (10).**

   a. Remove four screws (11).

   b. Remove transducer (9).

B. CLEANING

Clean airspeed transducer and airframe (para 1-5-36).

C. INSPECTION

1. **Rotate airspeed transducer to check for cracks and internal water contamination.** None allowed.

2. **Check airspeed transducer for corrosion** (para 1-5-38).

3. **Check connector for cracks, broken connections, bent pins, or damaged threads.** No cracks allowed. Thread damage not to exceed 50 percent of one thread.

GO TO NEXT PAGE

9-8-22. STABILATOR AIRSPEED TRANSDUCER REMOVAL/INSTALLATION (cont) 9-8-22

D. INSTALLATION

1. **Install transducer (9) on airframe (10).**

   a. Position transducer (9).

   b. Install four screws (11).

   c. Apply a bead of sealing compound to airspeed transducer cover (12), union (5), union (2), two brackets (13), connector (8), and all screws (14). Use compound (E28).

2. **Attach connector P983 or P984 (7) to connector MT17J1 or MT18J1 (8).**

3. **Connect pressure line (4).**

   a. Hold union (5).

   b. Install nut (6) on union (5).

4. Connect static line (1).

   a. Hold union (2).

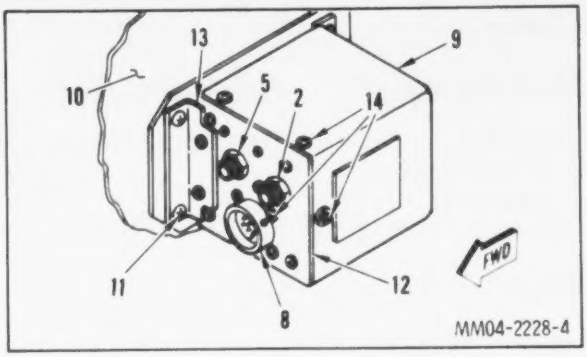
   b. Install nut (3) on union (2).

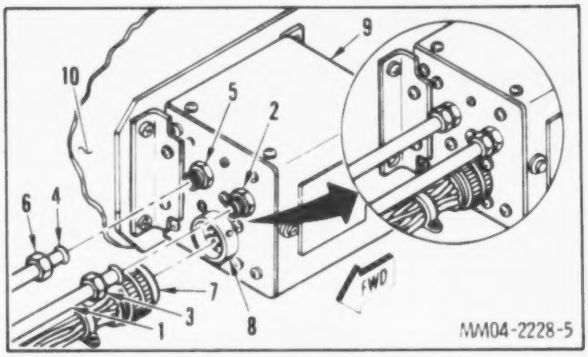
5. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

6. Leak test pitot-static tube (TM 55-1500-204-25/1).

7. **Inspect (TI).**

8. **Secure access doors T250L, T250R, T290L, T290R, and L325** (para 2-2-2).





END OF TASK

9-8-23. SQUAT SWITCH TARGET PLATE ADJUSTMENT 9-8-23

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Gage, Thickness	5120-00-221-1999

Materials/Parts:

(E29) Lockwire

Personnel Required:

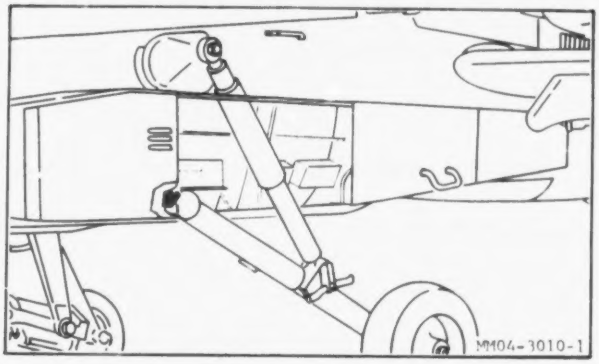
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

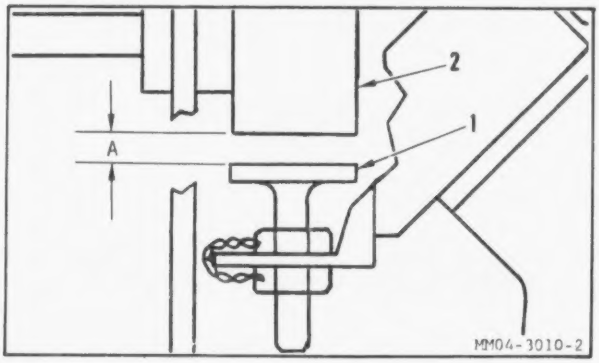
TM 55-1520-238-11-2

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Fairing L140 removed
1-7-12	Helicopter on jacks



1. **Measure clearance A between top of target plate (1) and bottom of squat switch (2).** Clearance must be **0.150 to 0.190 INCH.** Use thickness gage.
2. **Lower helicopter to ground** (para 1-7-12).



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9-8-23. SQUAT SWITCH TARGET PLATE ADJUSTMENT (cont) 9-8-23

4. **Remove target bracket (3) from main landing gear (4).**

   a. Remove two nuts (5), washers (6).

   b. Remove two bolts (7) and washers (6).

5. **Adjust target plate (1).**

   a. Remove lockwire from top nut (8) and bottom nut (9).

   b. Loosen bottom nut (9).

   c. Adjust target plate height B to achieve correct clearance A. Use thickness gage.

   Example:

   Clearance A (from step 1) : 0.200

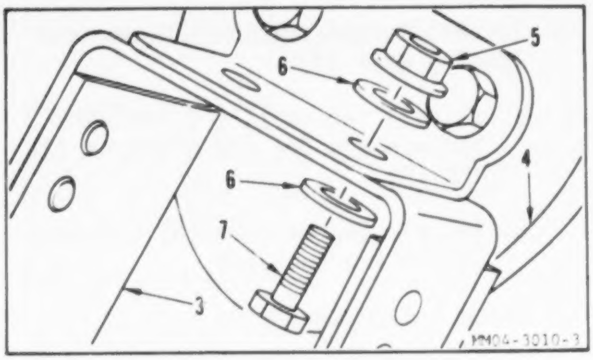
   Required clearance : 0.170

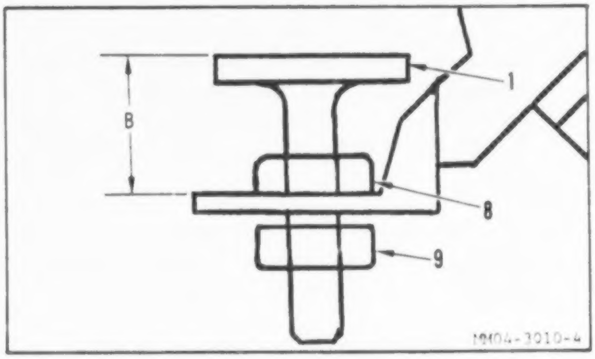
   Height B adjustment : 0.030

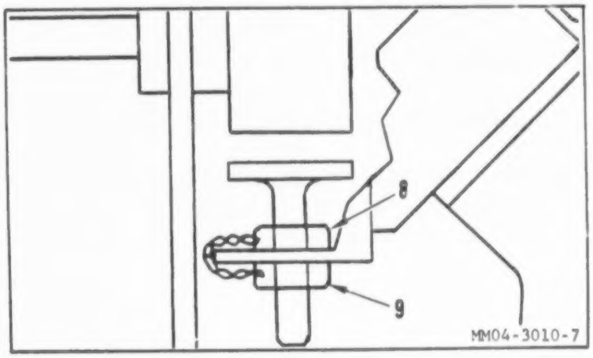
   Adjustment: Increase height B 0.030 inch.

   d. Tighten bottom nut (9).

   e. Lockwire top nut (8) to bottom nut (9). Use lockwire (E29).







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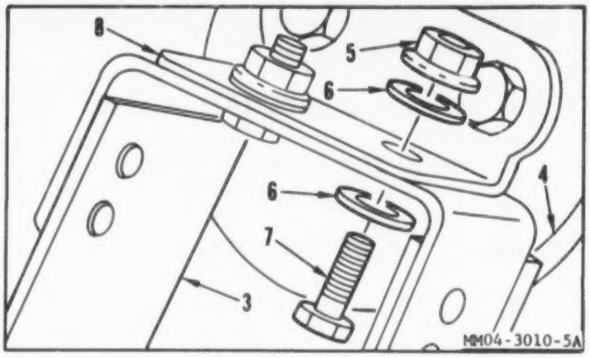
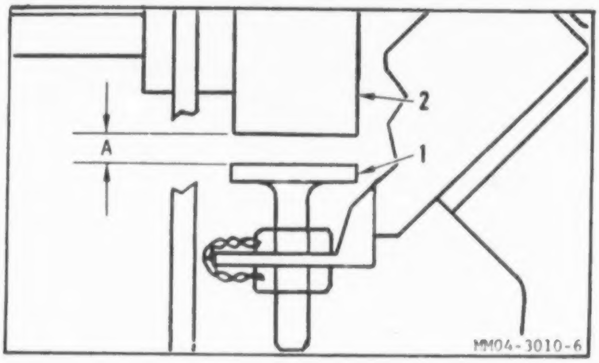
9-8-23. SQUAT SWITCH TARGET PLATE ADJUSTMENT (cont) 9-8-23

6. **Install target bracket (3) on main landing gear (4).**
   a. Install two bolts (7) through two washers (6) and brackets (3) and (8).
   b. Install two washers (6) and nuts (5) on two bolts(7).
7. **Raise helicopter** (para 1-7-12).



8. **Measure clearance A between top of target plate (1) and bottom of switch (2).** Clearance must be **0.150 to 0.190 INCH.** Use thickness gage.
9. **If clearance A is not within limits, repeat steps 2 thru 8 until proper clearance is obtained.**
10. **Lower helicopter. Remove jacks** (para 1-7-12).
11. **Inspect (TI).**
12. **Secure fairing L140** (para 2-2-2).
13. **Perform intercommunication system (ICS) operational check** (TM 11-1520-238-23-2).



END OF TASK

9-8-24. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT 9-8-24

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Set, Aircraft Armament Repairman's Basic	5120-00-987-9816
Knife, Putty	5120-00-221-1536
Ohmmeter, Digital	6625-01-125-3471

Materials/Parts:

(E68) Brush
(E86) Compound, Insulation

Personnel Required:

68J10	Aircraft Fire Control Repairer
66J30	Aircraft Armament Technical Inspector

References:

TM 55-1500-323-24
TM 9-1230-476-20-2

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

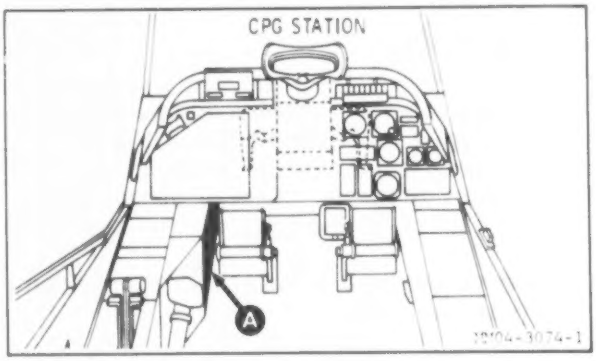
1. **Enter CPG station** (para 1-7-1). **Observe all safety precautions.**

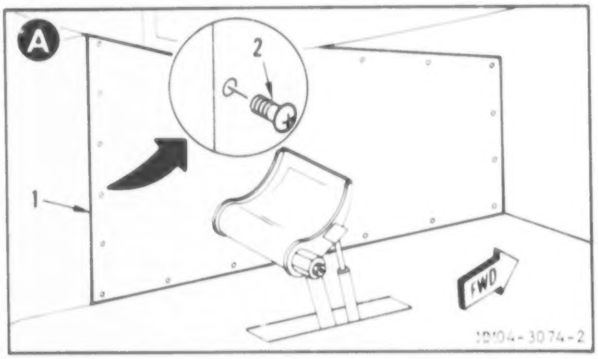
2. **Open seven MUX circuit breakers on CPG circuit breaker panel No. 1.**

NOTE

This task is typical for DLTUs T11, T13, T15, T17, T19, and T21.

3. **Remove left forward console access panel (1).** Remove 20 screws (2).





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9-8-24. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT (cont) 9-8-24

4. **Detach connector from connector:**

P639 (3)	T11J1 (4)
P641 (5)	T13J1 (6)
P643 (7)	T15J1 (8)
P645 (9)	T17J1 (10)
P647 (11)	T19J1 (12)
P649 (13)	T21J1 (14)

5. **Remove DLTU (15) from support bracket (16).** Remove two screws (17) and washers (18).

B. CLEANING

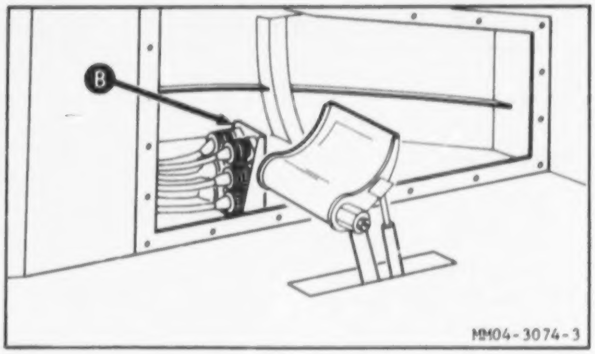
1. **Remove old sealant from DLTU mounting surface and support bracket.** Use putty knife.

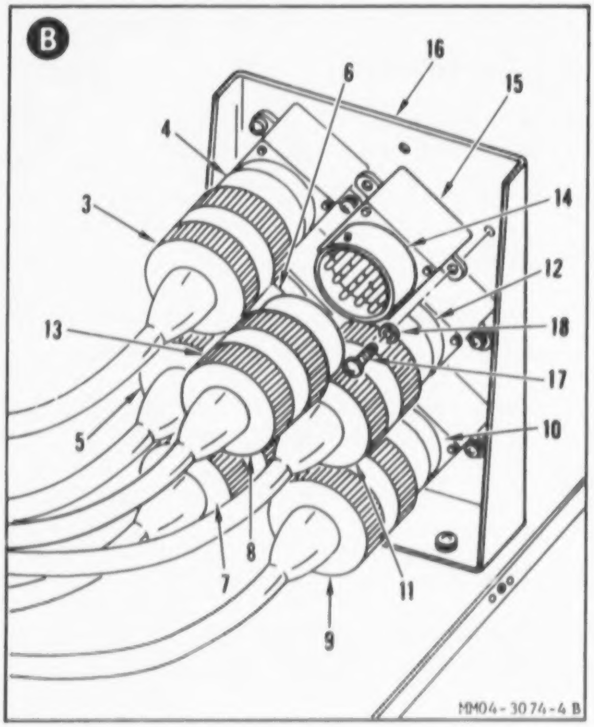
2. **Clean all removed parts, mounting surfaces, and attaching parts** (para 1-5-36).

C. INSPECTION

1. **Check support bracket nutplates for stripped or damaged threads and support bracket for cracks.** No cracks allowed. Thread damage not to exceed 50 percent of one thread.

2. **Check support bracket for corrosion** (para 1-5-38).





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9-8-24. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT (cont) 9-8-24

D. INSTALLATION

1. **Install DLTU (15) on support bracket (16).** Install two screws (17) through washers (18) and DLTU (15) into bracket (16).

2. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. **Apply insulation compound around base of DLTU (5).** Use compound (E86) and brush (E68). Discard brush in suitable container.

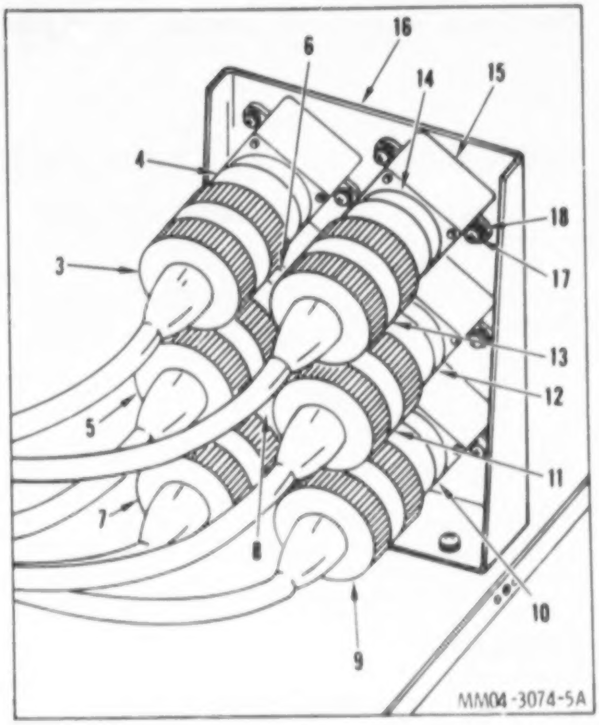
4. **Attach connector to connector:**

P639 (3)	T11J1 (4)
P641 (5)	T13J1 (6)
P643 (7)	T15J1 (8)
P645 (9)	T17J1 (10)
P647 (11)	T19J1 (12)
P649 (13)	T21J1 (14)

5. **Inspect (TI).**

6. **Install left forward console access panel (1).** Install 20 screws (2).

7. **Perform multiplex subsystem operational check** (TM 9-1230-476-20-2).



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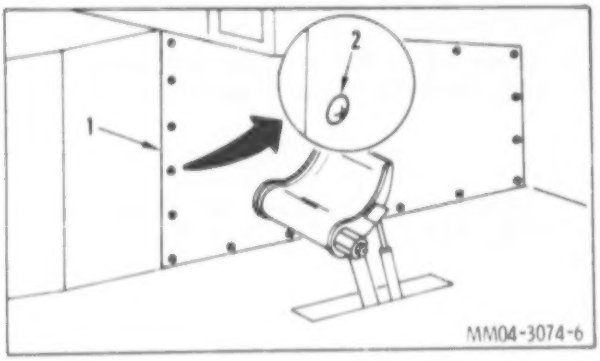

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END OF TASK

9-8-25. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT 9-8-25

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Set, Aircraft Armament Repairman's Basic	5120-00-987-9816
Knife, Putty	5120-00-221-1536
Ohmmeter, Digital	6625-01-125-3471

Materials/Parts:

(E68)	Brush
(E86)	Compound, Insulation

Personnel Required:

68J10	Aircraft Fire Control Repairer
66J30	Aircraft Armament Technical Inspector

References:

TM 9-1230-476-20-2
TM 55-1500-323-24

Equipment Conditions:

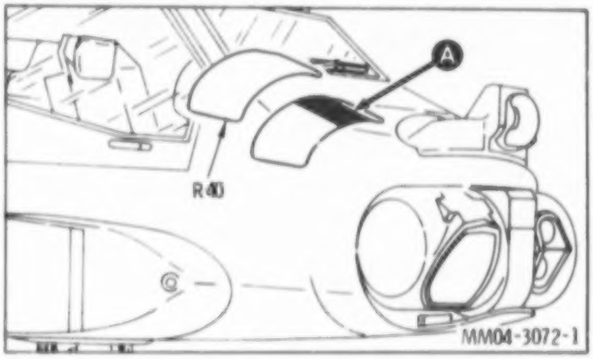
Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access cover R40 removed

A. REMOVAL

1. Enter CPG station (para 1-7-1). Observe all safety precautions.
2. Open seven MUX circuit breakers on CPG circuit breaker panel No. 1.

NOTE

This task is typical for DLTUs T12, T14, T16, T18, T20, and T22.



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9-8-25. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT (cont) 9-8-25

3. **Detach connector from connector:**

P640 (1)	T12J1 (2)
P642 (3)	T14J1 (4)
P644 (5)	T16J1 (6)
P646 (7)	T18J1 (8)
P648 (9)	T20J1 (10)
P650 (11)	T22J1 (12)

4. **Remove DLTU (13) from support (14).** Remove two screws (15) and washers (16).

B. CLEANING

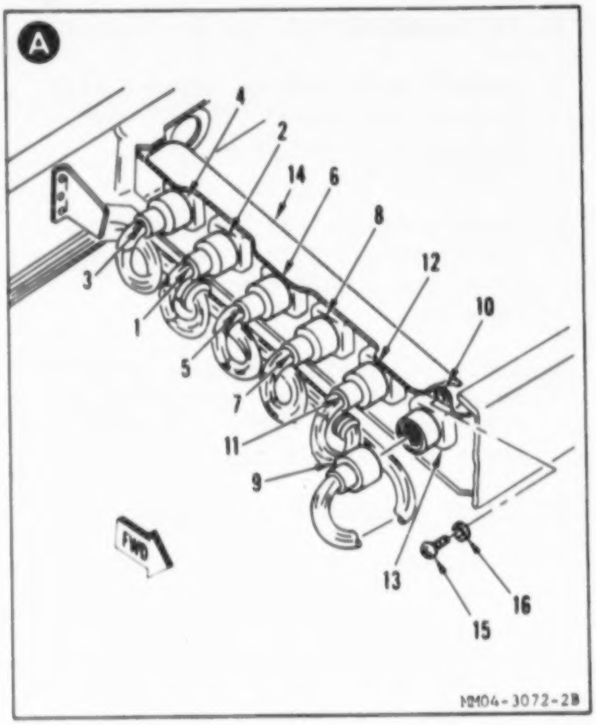
1. **Remove old sealant from DLTU mounting surface and support.** Use putty knife.

2. **Clean all removed parts, mounting surfaces, and attaching parts** (para 1-5-36).

C. INSPECTION

1. **Check support bracket nutplates for stripped or damaged threads and support bracket for cracks.** No cracks allowed. Thread damage not to exceed 50 percent of one thread.

2. **Check support for corrosion** (para 1-5-38).



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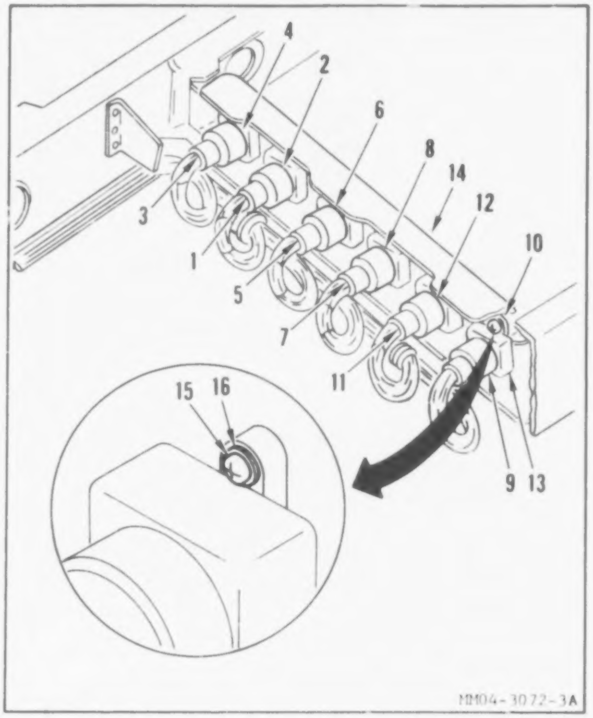
9-8-25. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT (cont) 9-8-25

D. INSTALLATION



1. **Install DLTU (13) on support (14).** Install two screws (15) through washers (16) and DLTU into support (14).

2. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. **Apply insulation compound around base of DLTU (13).** Use compound (E86) and brush (E68). Discard brush in suitable container.

4. **Attach connector to connector:**

P640 (1)	T12J1 (2)
P642 (3)	T14J1 (4)
P644 (5)	T16J1 (6)
P646 (7)	T18J1 (8)
P648 (9)	T20J1 (10)
P650 (11)	T22J1 (12)

5. **Inspect (TI).**

6. **Secure access cover R40** (para 2-2-2).

7. **Perform multiplex subsystem operational check** (TM 9-1230-476-20-2).

END OF TASK

9-8-26. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT 9-8-26

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Set, Aircraft Armament Repairman's Basic	5120-00-987-9816
Knife, Putty	5120-00-221-1536
Ohmmeter, Digital	6625-01-125-3471

Materials/Parts:

(E68) Brush
(E86) Compound, Insulation

Personnel Required:

68J10	Aircraft Fire Control Repairer
66J30	Aircraft Armament Technical Inspector

References:

TM 55-1500-323-24
TM 9-1230-476-20-2

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors T250L, T250R, T290L, T290R, and L325 opened

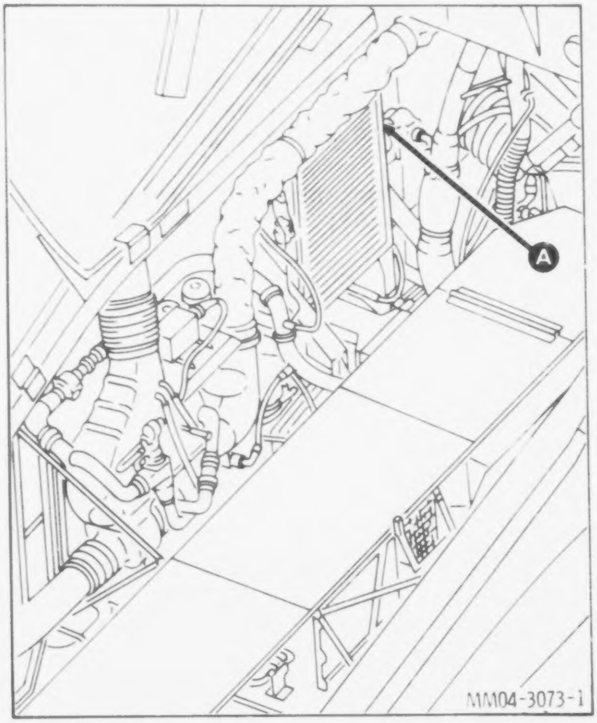
---

A. REMOVAL

1. Enter CPG station (para 1-7-1). Observe all safety precautions.
2. Open seven MUX circuit breakers on CPG circuit breaker panel No. 1.

NOTE

This task is typical for DLTUs T25, T27, T29, and T31.



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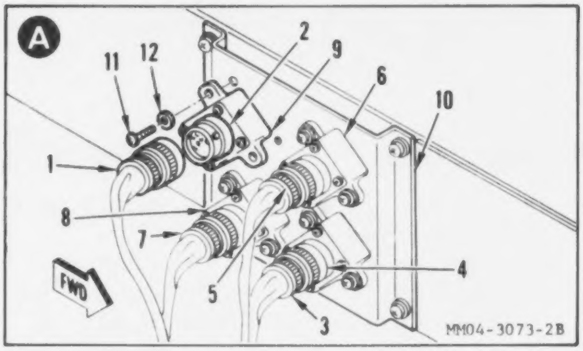
9-8-26. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT (cont) 9-8-26

3. **Detach connector from connector:**

P653 (1)	T25J1 (2)
P655 (3)	T27J1 (4)
P659 (5)	T29J1 (6)
P657 (7)	T29J1 (8)

4. **Remove DLTU (9) from support bracket (10).** Remove two screws (11) and two washers (12).



B. CLEANING

1. **Remove old sealant from DLTU mounting surface and support bracket.** Use putty knife.

2. **Clean all removed parts, mounting surfaces, and attaching parts** (para 1-5-36).

C. INSPECTION

1. **Check support bracket nutplates for stripped or damaged threads, and support bracket for cracks.** No cracks allowed. Thread damage not to exceed 50 percent of one thread.

2. **Check support bracket for corrosion** (para 1-5-38).

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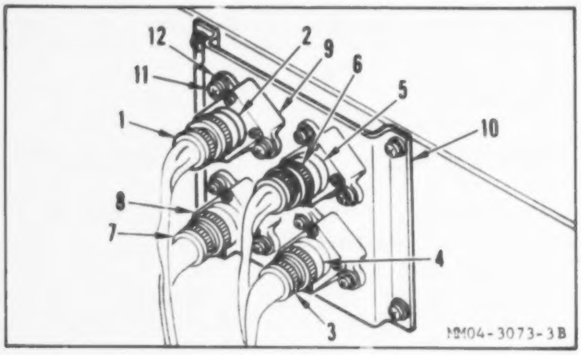
9-8-26. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT (cont) 9-8-26

D. INSTALLATION



1. **Install DLTU (9) on support bracket (10).** Install two screws (11) through washers (12) and DLTU (9) into bracket (10).

2. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. **Apply insulation compound around base of DLTU (9).** Use brush (E68) and compound (E86). Discard brush in suitable container.

4. **Attach connector to connector:**

P653 (1)	T25J1 (2)
P655 (3)	T27J1 (4)
P659 (5)	T29J1 (6)
P657 (7)	T31J1 (8)

5. **Inspect (TI).**

6. **Secure access doors T250L, T250R, T290L, T290R, and L325** (para 2-2-2).

7. **Perform multiplex subsystem operational check** (TM 9-1230-476-20-2).

END OF TASK

9-8-27. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT 9-8-27

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Set, Aircraft Armament Repairman's Basic	5120-00-987-9816
Knife, Putty	5120-00-221-1536
Ohmmeter, Digital	6625-01-125-3471

Materials/Parts:

(E68)	Brush
(E86)	Compound, Insulation

Personnel Required:

68J10	Aircraft Fire Control Repairer
66J30	Aircraft Armament Technical Inspector

References:

TM 9-1230-476-20-2
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors T250R, T250L, T290L, T290R, and L325 opened

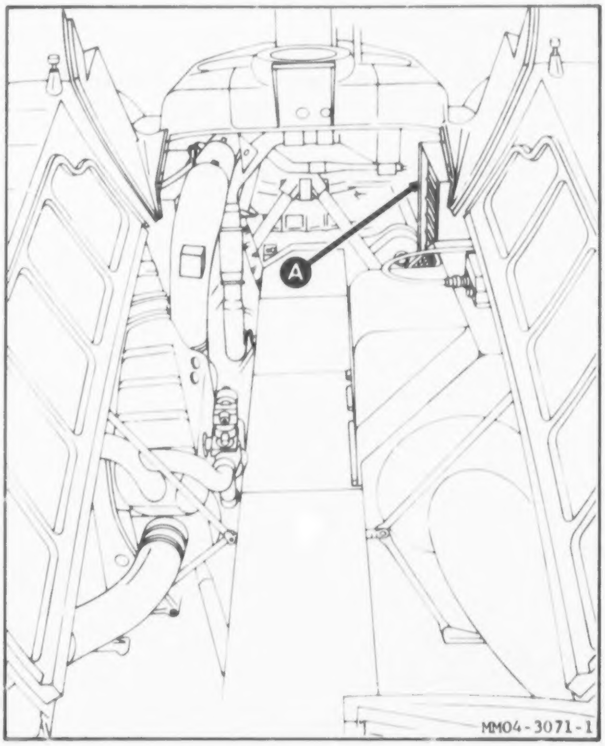
A. REMOVAL

1. Enter CPG station (para 1-7-1). Observe all safety precautions.

2. Open seven MUX circuit breakers on CPG circuit breaker panel No. 1.

NOTE

This task is typical for DLTUs T26, T28, T30, and T32.



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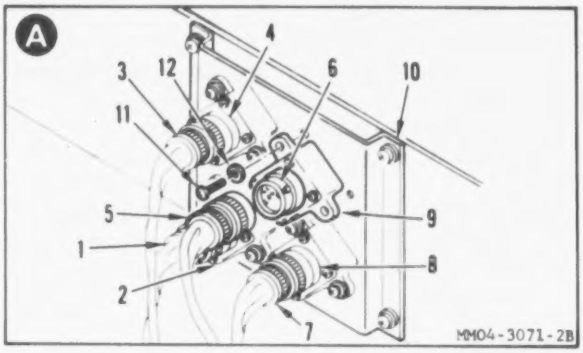
9-8-27. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT (cont) 9-8-27



3. **Detach connector from connector:**

P654 (1)	T26J1 (2)
P656 (3)	T28J1 (4)
P658 (5)	T30J1 (6)
P660 (7)	T32J1 (8)

4. **Remove DLTU (9) from support bracket (10).** Remove two screws (11) and washers (12).

B. **CLEANING**

1. **Remove old sealant from DLTU mounting surface and support.** Use putty knife.

2. **Clean all removed parts, mounting surfaces, and attaching parts** (para 1-5-36).

C. **INSPECTION**

1. **Check support bracket nutplates for stripped or damaged threads, and support bracket for cracks.** No cracks allowed. Thread damage not to exceed 50 percent of one thread.

2. **Check support bracket for corrosion** (para 1-5-38).

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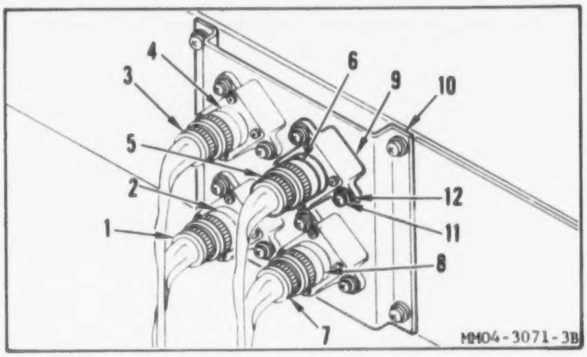
9-8-27. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT (cont) 9-8-27



D. INSTALLATION

1. **Install DLTU (9) on support bracket (10).** Install two screws (11) through washers (12) and DLTU (9) into bracket (10).

2. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. **Apply insulation compound around base of DLTU (9).** Use brush (E68) and compound (E86). Discard brush in suitable container.

4. **Attach connector to connector:**

P654 (1)	T26J1 (2)
P656 (3)	T28J1 (4)
P658 (5)	T30J1 (6)
P660 (7)	T32J1 (8)

5. **Inspect (TI).**

6. **Secure access doors T250L, T250R, T290L, T290R, and L325** (para 2-2-2).

7. **Perform multiplex subsystem operational check** (TM 9-1230-476-20-2).

END OF TASK

9-8-28. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT 9-8-28

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Set, Aircraft Armament Repairman's Basic	5120-00-987-9816
Knife, Putty	5120-00-221-1536

Materials/Parts:

(F68)	Brush
(E86)	Compound, Insulation

Personnel Required:

68J10	Aircraft Fire Control Repairer
66J30	Aircraft Armament Technical Inspector

References:

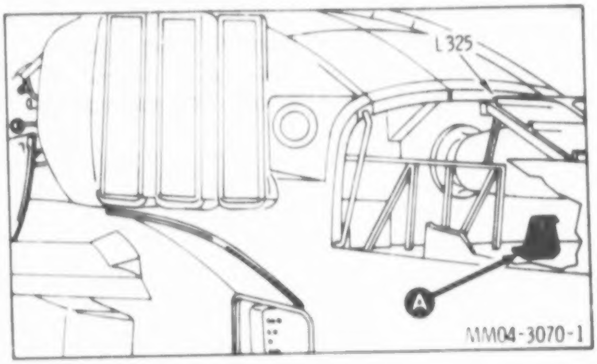
TM 9-1230-476-20-2
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access fairing T325 opened

A. REMOVAL

1. Enter CPG station (para 1-7-1). Observe all safety precautions.
2. Open seven MUX circuit breakers on CPG circuit breaker panel No. 1.



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9-8-28. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT (cont) 9-8-28

3. **Detach connector P663 (1) from connector T35J663 (2) on DLTU (3).**

4. **Remove DLTU (3) from bracket (4).** Remove two screws (5) and washers (6).

B. **CLEANING**

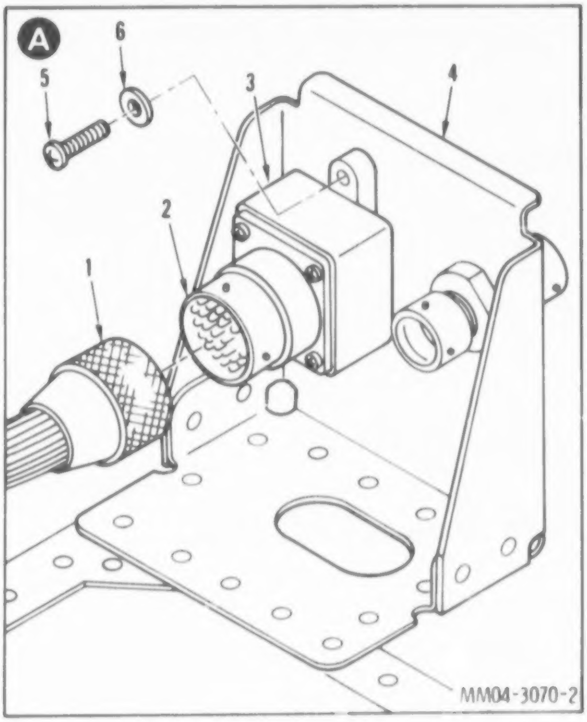
1. **Remove old sealant from DLTU mounting surface and support bracket.** Use putty knife.

2. **Clean all removed parts, mounting surfaces, and attaching parts** (para 1-5-36).

C. **INSPECTION**

1. **Check support bracket nutplates for stripped or damaged threads and support bracket for cracks.** No cracks allowed. Thread damage not to exceed 50 percent of one thread.

2. **Check support bracket for corrosion** (para 1-5-38).



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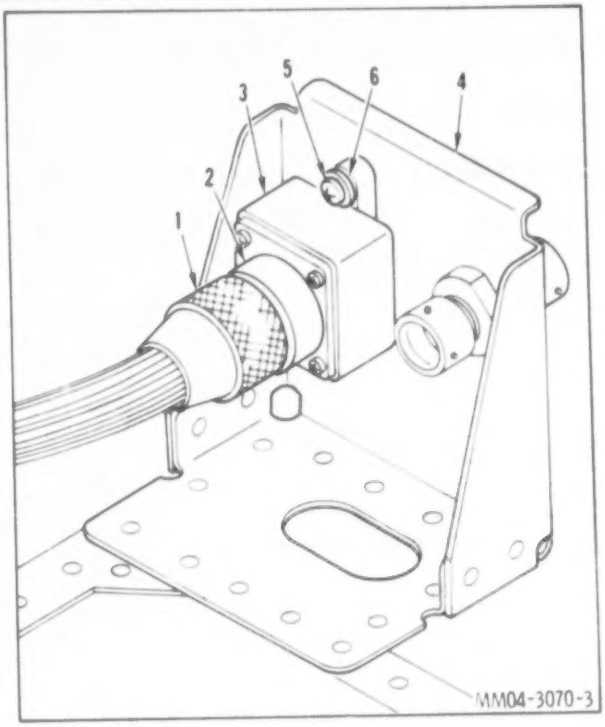
9-8-28. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT (cont) 9-8-28



D. INSTALLATION

1. Install DLTU (3) on support bracket (4). Install two screws (5) through washers (6) and DLTU (3) into bracket (4).

2. Perform electrical bonding check (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. Apply insulation compound around base of DLTU (3). Use brush (E68) and compound (E86). Discard brush in suitable container.

4. Attach connector P663 (1) to connector T35J663 (2) on DLTU (3).

5. Inspect (TI).

6. Secure access fairing T325 (para 2-2-2).

7. Perform multiplex subsystem operational check (TM 9-1230-476-20-2).

END OF TASK

9-8-29. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT 9-8-29

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Set, Aircraft Armament Repairman's Basic	5120-00-987-9816
Knife, Putty	5120-00-221-1536

Materials/Parts:

(E68)	Brush
(E86)	Compound, Insulation

Personnel Required:

68J10	Aircraft Fire Control Repairer
66J30	Aircraft Armament Technical Inspector

References:

TM 9-1230-476-20-2
TM 55-1500-323-24

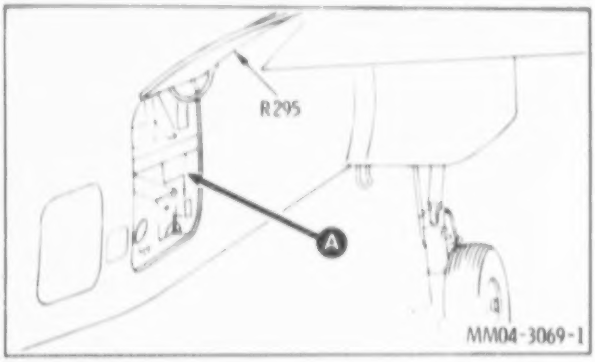
Equipment Conditions:

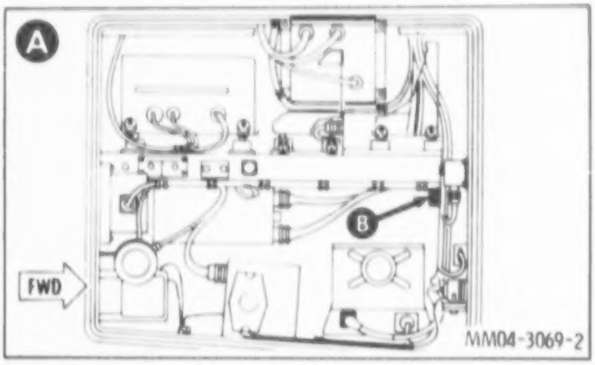
Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access door R295 opened

A. REMOVAL

1. Enter CPG station (para 1-7-1). Observe all safety precautions.

2. Open seven MUX circuit breakers on CPG circuit breaker panel No. 1.





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9-8-29. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT (cont) 9-8-29

3. Detach connector P664 (1) from connector T36 (2) on DLTU (3).

4. Remove DLTU (3) from bulkhead (4). Remove two screws (5) and two washers (6).

B. CLEANING

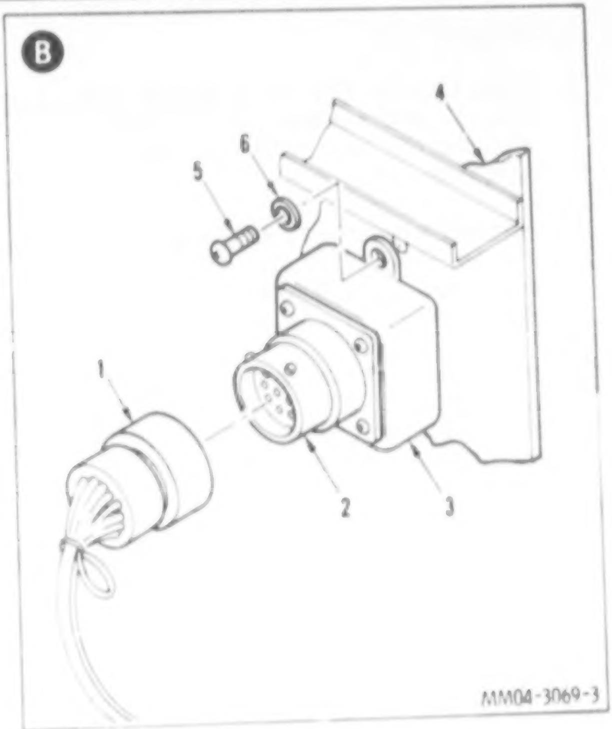
1. Remove old sealant from DLTU mounting surface and bulkhead. Use putty knife.

2. Clean all removed parts, mounting surfaces, and attaching parts (para 1-5-36).

C. INSPECTION

1. Check support bracket nutplates for stripped or damaged threads and support bracket for cracks. No cracks allowed. Thread damage not to exceed 50 percent of one thread.

2. Check bulkhead for corrosion (para 1-5-38).



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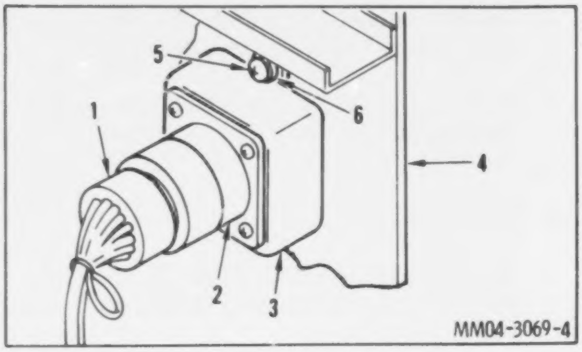
9-8-29. DATA LINK TERMINATION UNIT (DLTU) REPLACEMENT (cont) 9-8-29

D. INSTALLATION



1. **Install DLTU (3) on bulkhead (4).** Install two screws (5) through washers (6) and DLTU (3) into bulkhead (4).

2. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

3. **Apply insulation compound around base of DLTU (3).** Use brush (E68) and compound (E86). Dischard brush in suitable container.

4. **Attach connector P664 (1) to connector T35 (2) on DLTU (3).**

5. **Inspect (TI).**

6. **Secure access door R295** (para 2-2-2).

7. **Perform multiplex subsystem operational check** (TM 9-1230-476-20-2).

END OF TASK

9-8-30. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR 9-8-30

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. REPAIR E. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5120-00-323-4915
Kit, MTC 100, Repair	4920-01-252-0361
Tool Kit, Heating	4940-01-037-1413
Generator, Gas Engine	6115-00-889-1447
Cable, Electrical Power	5110-00-682-3460
Aviation Ground Power Unit (AGPU)	1730-01-144-1897
Ohmmeter, Digital	6625-01-125-3417
Multimeter, Digital AN/PSM-45	6625-01-139-2512

Materials/Parts:

Nitrogen

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

WARNING

- **To prevent electrical shock or damage to sensitive electrical equipment, turn off and disconnect external and battery electrical power. Tag external battery power switch: "Do not apply electrical power".**
- **This task is for repair of mass termination connectors (MTC) either on or off aircraft. Heating tool kit requires 110 volt AC power and supply of regulated air. When working on aircraft, nitrogen must be substituted for air to prevent danger of fire. Use gas generator, power cable, aviation ground power unit, or nitrogen as necessary.**

NOTE

This task is typical for cable or panel connector with pin or socket connections.

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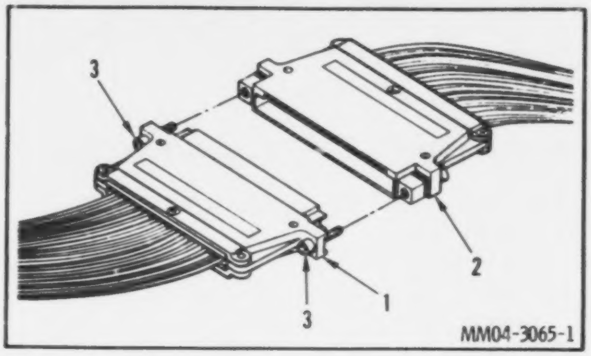
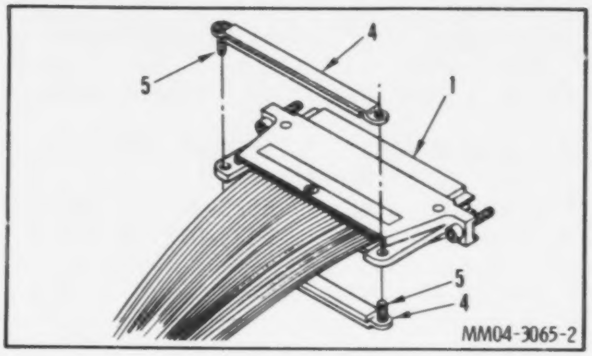
9-8-30. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR (cont) 9-8-30

A. REMOVAL

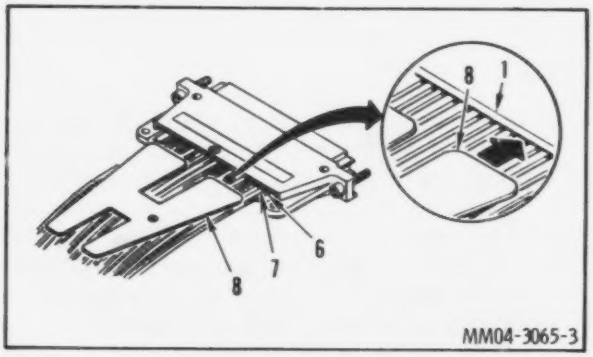
1. Detach connector (1) from connector (2). Loosen two captive jack screws (3).

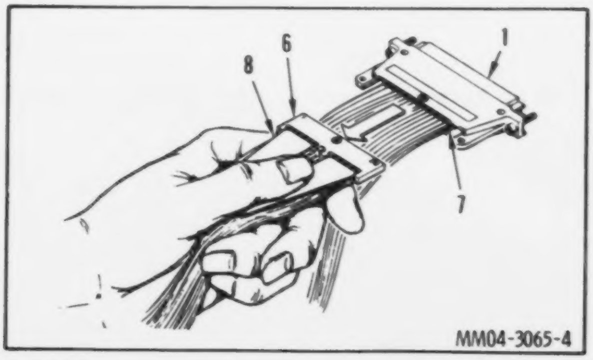

3
2
1
3
MM04-3065-1

2. Remove two cable clamps (4) from connector (1). Loosen two captive screws (5).


4
5
1
5
4
MM04-3065-2

3. Remove two wafers (6) and (7) from connector (1).
   a. Insert wafer removal tool (8) into rear of connector (1) between connector (1) and wafer (6) until tool (8) locks in place.
   b. Pull on tool (8) and wires connected to wafer (6) until wafer (6) is free.
   c. Pull wafer (7) out of connector (1).


8
1
6
7
8
MM04-3065-3


8
6
1
7
MM04-3065-4

GO TO NEXT PAGE

9-8-30. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR (cont) 9-8-30

4. **When working on harness installed in aircraft, attach static ground bus (9) to wafer (6).** Very gentle insertion is sufficient for static grounding.

NOTE

Wafers are identified as A or B to correspond to A or B side of connector. Contacts are 1 thru 10 (1 inch) or 1 thru 20 (2 inch).

5. **Identify wires (10) to be removed from wafer (6).**

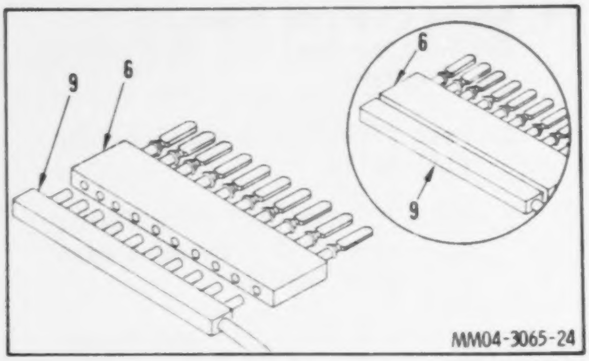
6. **Make a shallow cut along length of wafer sleeve (11).** It is not necessary to cut through sleeve (11).

7. **Insert wafer (6) in repair fixture (12).** Install wafer key (13) facing up under clamping cover (14).

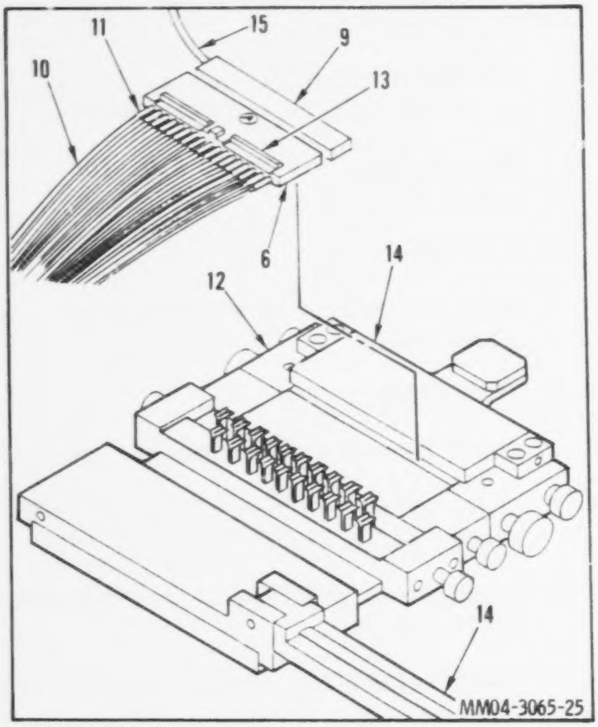
8. **Attach ground lead (15) to a reliable ground.**

CAUTION

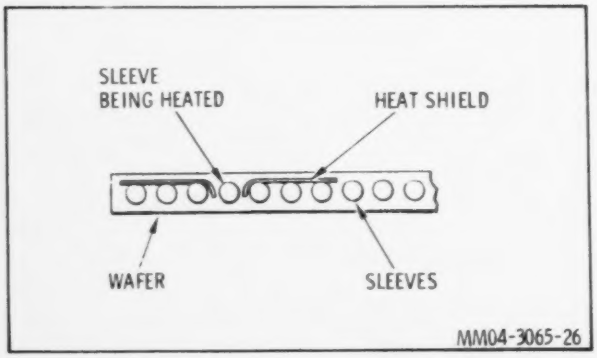
When heating single sleeve, use shields to isolate sleeve and prevent damage to other sleeves. If more than one sleeve or a row of sleeves is being heated, begin heating at one end of sleeves. Direct heat so next sleeve will be preheated.



MM04-3065-24



MM04-3065-25



MM04-3065-26

GO TO NEXT PAGE

9-8-30. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR (cont) 9-8-30

9. **Remove wire (10) from wafer (6).** Use heating tool kit, foil shield, and tweezers.

   a. Heat sleeve (11) until solder (16) melts.

   b. While solder (16) is melting, pull wire (10) free of sleeve (11) with tweezers.

   c. Remove sleeve (11) and excess solder (16) from wafer terminal (17).

   d. Repeat steps a. thru c. for all wires (10) marked for removal.

10. **Repeat steps A.4. thru A.9. for wafer (7).**

B. CLEANING

Wipe connector and wires with a clean rag.

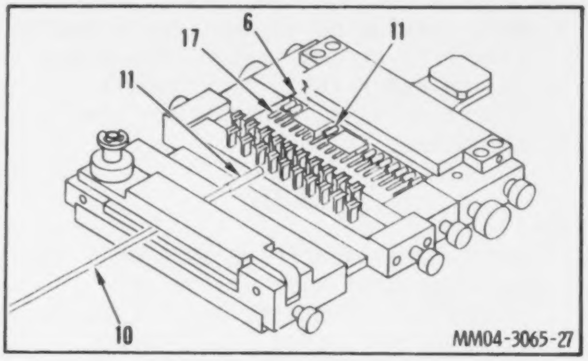
C. INSPECTION

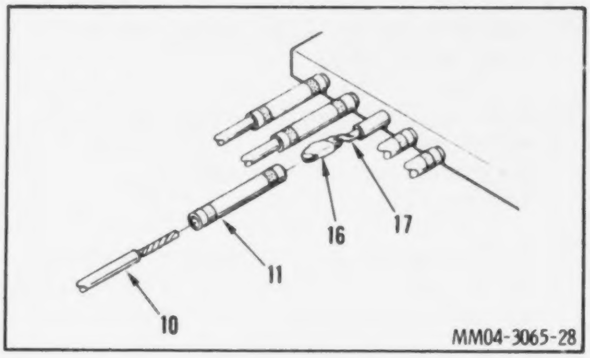
1. **Check connectors for damaged shell.**

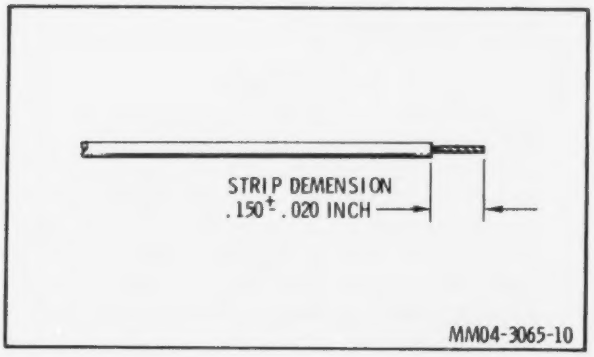
2. **Check wires for broken strands and proper strip sizes.**

3. **Check wires are free of residue and excess solder.**

4. **Check wafers for damaged terminals.**


17
6
11
11
10
MM04-3065-27


16
17
11
10
MM04-3065-28


STRIP DEMENSION
.150± .020 INCH
MM04-3065-10

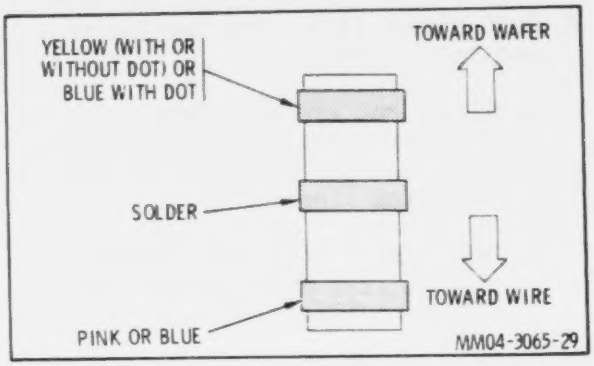
GO TO NEXT PAGE

9-8-30. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR (cont) 9-8-30

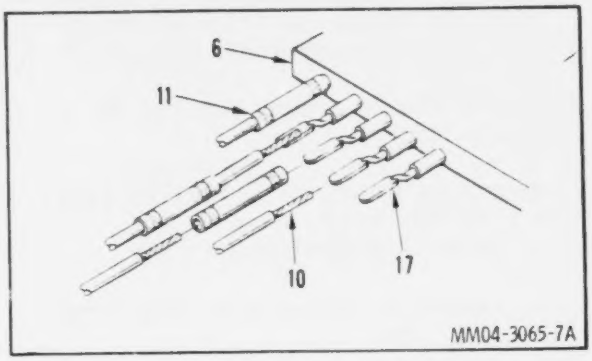
D. REPAIR

NOTE

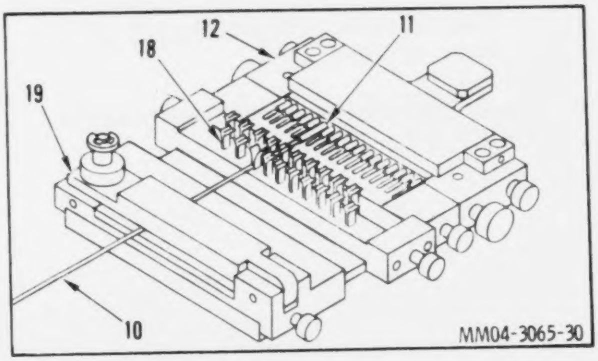
Failure to observe correct orientation of sleeve on wire will cause improper solder flow or incorrect sleeve position.


YELLOW (WITH OR WITHOUT DOT) OR BLUE WITH DOT
TOWARD WAFER
SOLDER
TOWARD WIRE
PINK OR BLUE
MM04-3065-29

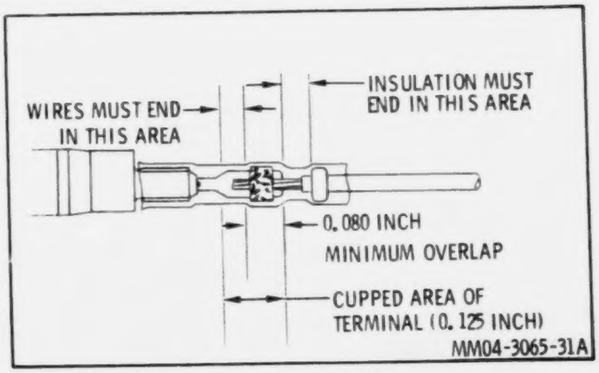
1. **Install sleeve (11) on wafer terminal (17).**
   - a. Slide blue end of sleeve (11) back over wire (10).
   - b. Position stripped end of wire (10) on wafer terminal (17).
   - c. Hold wire (10).
   - d. Slide sleeve (11) over wire (10), terminal (17) and against wafer (6).


6
11
10
17
MM04-3065-7A

2. **Secure wire (10) in fixture (12).**
   - a. Press wire (10) into wire clip (18).
   - b. Close and latch wire clamp (19) to secure wires (10).

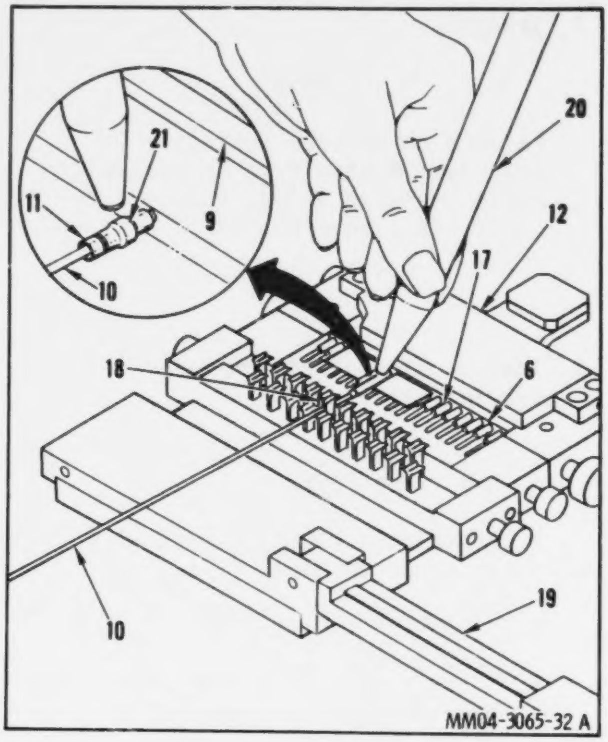

12
11
18
19
10
MM04-3065-30

3. **Check sleeve (11) and wire (10) for proper position.**


INSULATION MUST END IN THIS AREA
WIRES MUST END IN THIS AREA
0.080 INCH MINIMUM OVERLAP
CUPPED AREA OF TERMINAL (0.125 INCH)
MM04-3065-31A

GO TO NEXT PAGE

9-8-30. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR (cont) 9-8-30



4. **Heat sleeve (11).** Use heating tool and foil shield.
   a. Direct hot air at sleeve (11).
   b. Hold heat gun (20) 1/8- to 1/4-inch from sleeve (11).
   c. Heat sleeve (11) until solder preform (21) melts, flows, and wets wire (10).
5. **Check for proper heating of sleeve (11) and proper position of wires (10) on wafer terminals (17).**
6. **Remove static ground bus (9) if installed.**
7. **Remove wafer (6) from fixture (12).**
   a. Unlatch clamp (19).
   b. Carefully remove wire (10) from clip (18).
   c. Remove wafer (6) with wire (10) from fixture (12).
8. **Check continuity .** Use multimeter (TM 55-1500-323-24).

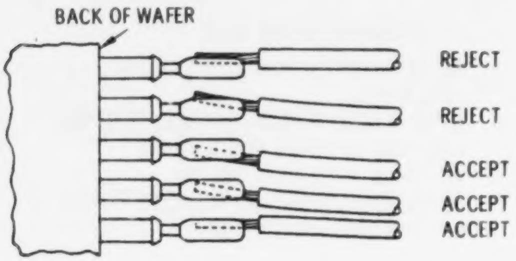
GO TO NEXT PAGE

9-8-30. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR (cont) 9-8-30

PROPER POSITION OF WIRE ON WAFER TERMINAL

WIRE POSITION

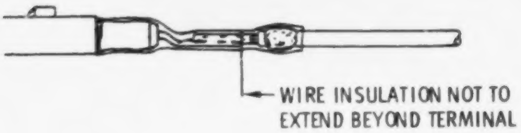
WIRE END MUST BE POSITIONED IN TERMINAL AS SHOWN


BACK OF WAFER
REJECT
REJECT
ACCEPT
ACCEPT
ACCEPT

NOTE: INSULATION SLEEVE NOT SHOWN FOR CLARITY

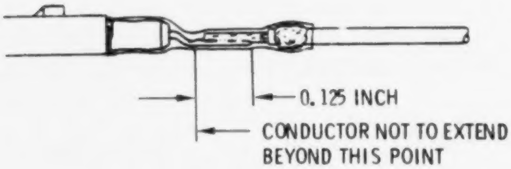
WIRE INSULATION OVERLAP

WIRE INSULATION MUST NOT OVERLAP WAFER TERMINAL


WIRE INSULATION NOT TO EXTEND BEYOND TERMINAL

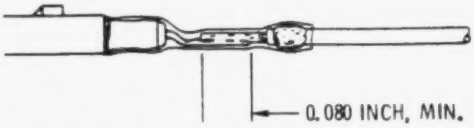
SOLDER TERMINAL OVERLAP (MAXIMUM)

STRIPPED END OF WIRE MUST BE IN CUPPED AREA OF WAFER TERMINAL, AND MUST NOT EXTEND BEYOND CUPPED AREA


0.125 INCH
CONDUCTOR NOT TO EXTEND BEYOND THIS POINT

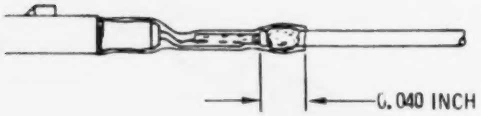
SOLDER TERMINAL OVERLAP (MINIMUM)

STRIPPED END OF WIRE MUST OVERLAP TERMINAL AT LEAST 0.080 INCH


0.080 INCH, MIN.

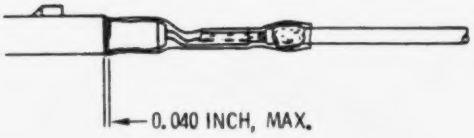
WIRE END SLEEVE OVERLAP

SHRINKABLE SLEEVE MUST OVERLAP WIRE INSULATION AT LEAST 0.040 INCH



WAFER END SLEEVE OVERLAP

WAFER END OF SHRINKABLE SLEEVE MUST BE WITHIN 0.040 INCH OF WAFER BODY


0.040 INCH, MAX.

MM04-3065-23B

GO TO NEXT PAGE

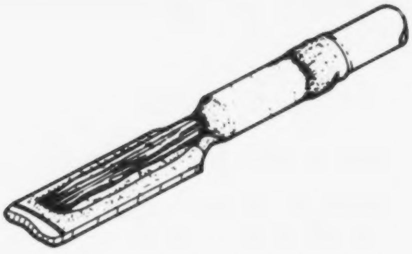
9-8-30. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR (cont) 9-8-30

PROPER HEATING (SOLDERING) OF SLEEVE

ACCEPT OF THE FOLLOWING CONDITIONS EXIST:

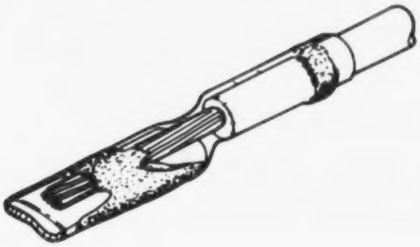
MAXIMUM SOLDER FLOW

A. SOLDER FILLET BETWEEN TERMINAL AND WIRE IS VISIBLE.
B. JOINT AREA IS VISIBLE DESPITE BROWNING OF SLEEVE.



MINIMUM SOLDER FLOW

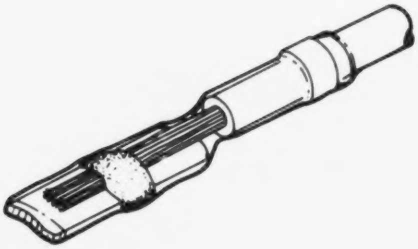
A. SOLDER PREFORM HAS LOST ORIGINAL RING SHAPE.
B. DEFINITE SOLDER FILLET BETWEEN TERMINAL AND WIRE IS VISIBLE AT BOTH ENDS.
C. MELTABLE SEALS HAVE MELTED.
D. SHRINKABLE SLEEVE HAS SQUEEZED TIGHTLY AROUND WIRE AND TERMINAL.



REJECT IF THE FOLLOWING CONDITIONS EXIST:

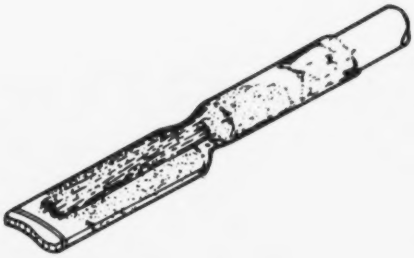
INSUFFICIENT HEAT - MAY BE REHEATED

A. RING SHAPE OF SOLDER PREFORM IS VISIBLE.B. SLEEVE IS NOT FULLY SHRUNK.
C. SEALS ARE NOT TIGHT AROUND WIRE AND TERMINAL.



OVERHEATED

A. JOINT AREA IS NOT VISIBLE BECAUSE OF SEVERE DARKENING OF SLEEVE.
B. SOLDER FILLET IS NOT VISIBLE BETWEEN TERMINAL AND WIRE.



MM04-3065-220

GO TO NEXT PAGE

9-8-30. MASS TERMINATION CONNECTOR (MTC) (1 OR 2 INCH) REPAIR (cont) 9-8-30

E. INSTALLATION

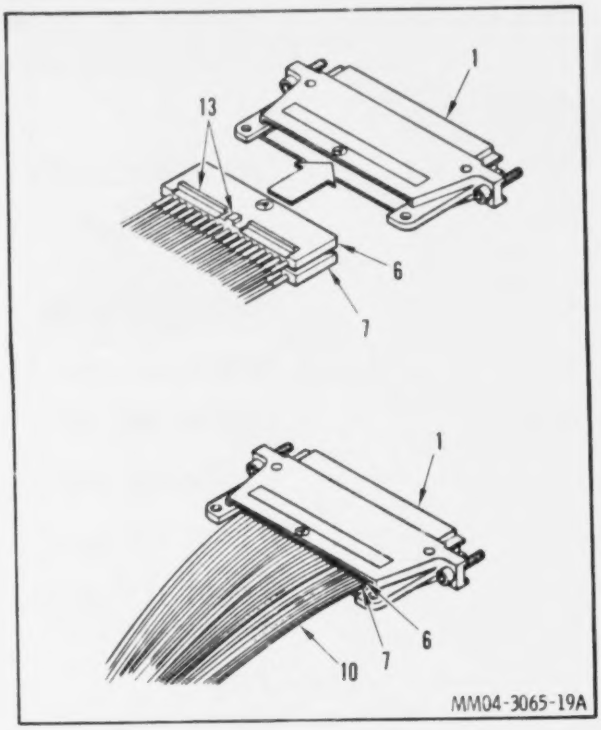
1. **Install wafers (6) and (7) in connector (1).**

   a. Place wafers (6) and (7) together with wafer keys (13) facing out.

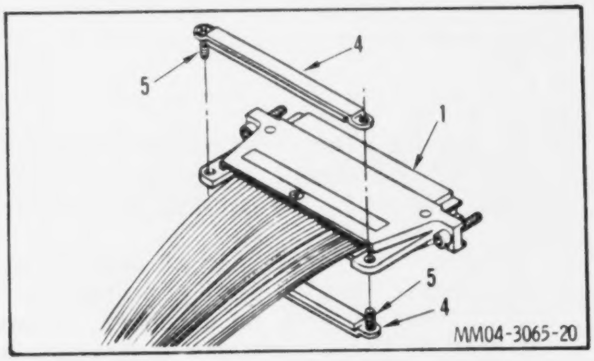
   b. Aline A and B sides of wafers (6) and (7) with A and B sides of connector (1).

   c. Insert wafers into connector until keys (13) lock.

   d. Gently pull on wires (10) to ensure wafers (6) and (7) are secure in connector (1).



2. **Install two cable clamps (4) on connector (1).** Tighten two captive screws (5).

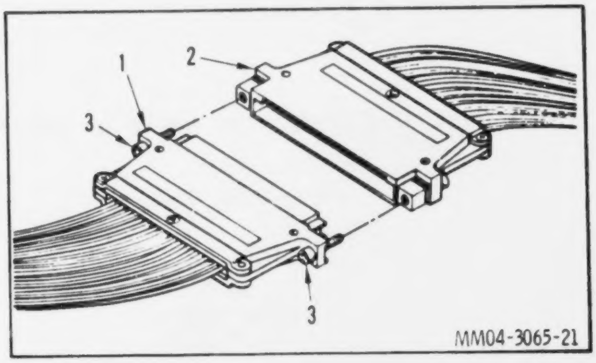


3. **Inspect (TI).**

4. **Attach connector (1) to connector (2).** Tighten two captive jack screws (3).

5. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

6. **Perform appropriate system operational check.**



END OF TASK

9-8-31. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR 9-8-31

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. REPAIR E. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5120-00-323-4915
Kit, MTC 100 Repair	4920-01-252-0361
Tool Kit, Heating	4940-01-037-1413
Generator, Gas Engine	6115-00-889-1447
Cable, Electrical Power	5110-00-682-3460
Aviation Ground Power Unit (AGPU)	1730-01-144-1897
Ohmmeter, Digital	6625-01-125-3417
Multimeter, Digital AN/PSM-45	6625-01-139-2512

Materials/Parts:

Nitrogen

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

WARNING

- **To prevent electrical shock or damage to sensitive electrical equipment, turn off and disconnect external and battery electrical power. Tag external battery power switch: "Do not apply electrical power".**
- **This task is for repair of mass termination connectors (MTC) either on or off aircraft. Heating tool kit requires 110 volt AC power and supply of regulated air. When working on aircraft, nitrogen must be substituted for air to prevent danger of fire. Use gas generator, power cable, aviation ground power unit, or nitrogen as necessary.**

NOTE

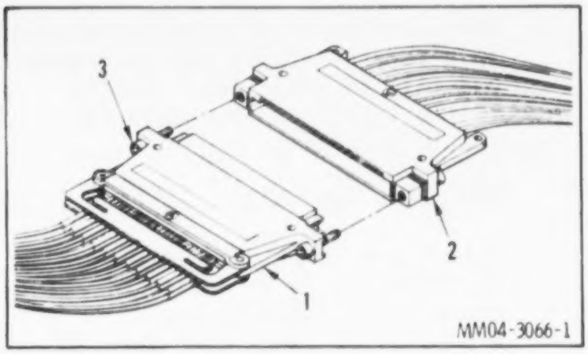
This task is typical for cable or panel connector with pin or socket connections.

GO TO NEXT PAGE

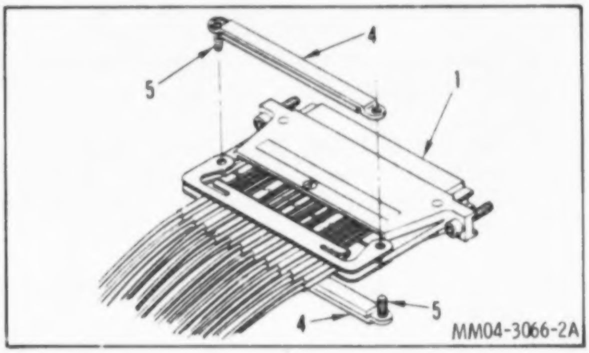
9-8-31. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR (cont) 9-8-31

A. REMOVAL

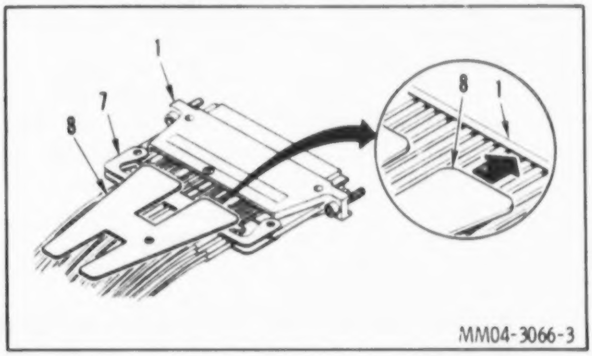
1. **Detach connector (1) from connector (2).** Loosen two captive jack screws (3).

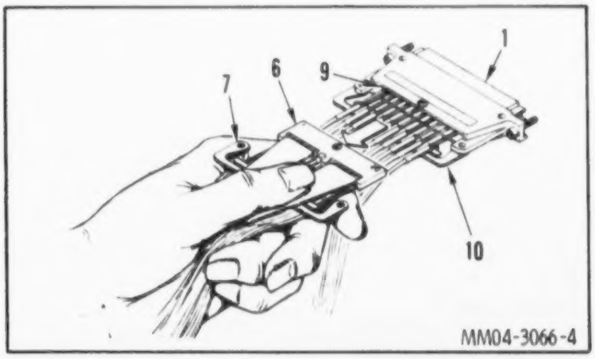

3
2
1
MM04-3066-1

2. **Remove two cable clamps (4) from connector (1).** Loosen two captive screws (5).


4
5
1
5
4
MM04-3066-2A

3. **Remove wafer (6) with shield bus (7) from connector (1).**
   a. Insert wafer removal tool (8) in rear of connector (1) and on top of wafer (6) and shield bus (7).
   b. Push tool (8) in until tool locks in place.
   c. Pull tool (8) and wafer (6) with bus (7) out of connector (1).
   d. Pull wafer (9) with bus (10) out of connector (1).


1
7
8
8
1
MM04-3066-3


1
7
6
9
10
MM04-3066-4

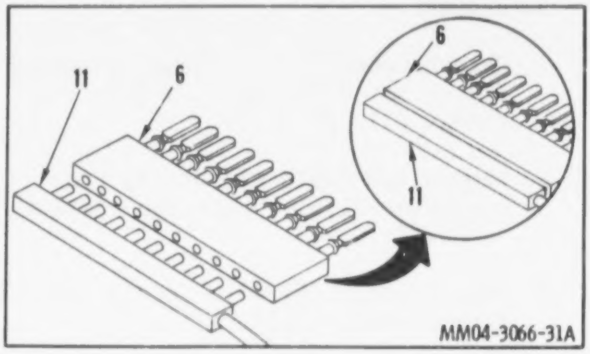
GO TO NEXT PAGE

9-8-31. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR (cont) 9-8-31

4. **When working on a harness installed in aircraft, attach static ground bus (11) to wafer (6).** Verify gentle insertion is enough for static grounding.

NOTE

Wafers are identified as A or B to correspond to A or B side of connector. Contacts are 1 thru 10 (1-inch) or 1 thru 20 (2-inch).



5. **Identify wire (12) to be removed from wafer (6).**

6. **Make a shallow cut along length of wafer sleeve (13) and bus sleeve (14) marked for removal. Do not cut through sleeves (13) and (14).**

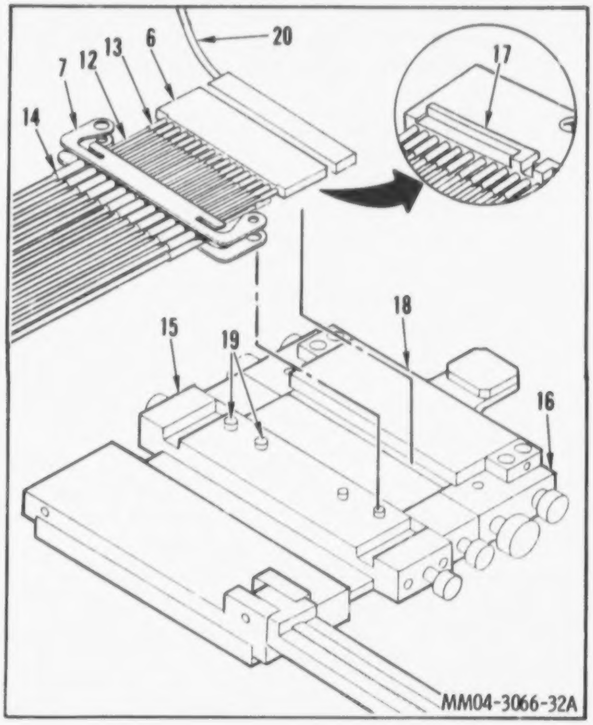
7. **Install bus module (15) in repair fixture (16).**

8. **Install wafer (6) in repair fixture (16).**

   a. Install wafer (6) with wafer key (17) face down under clamping cover (18).

   b. Bus (7) fits on alinement pins (19).

9. **Attach gound lead (20) to a reliable ground.**



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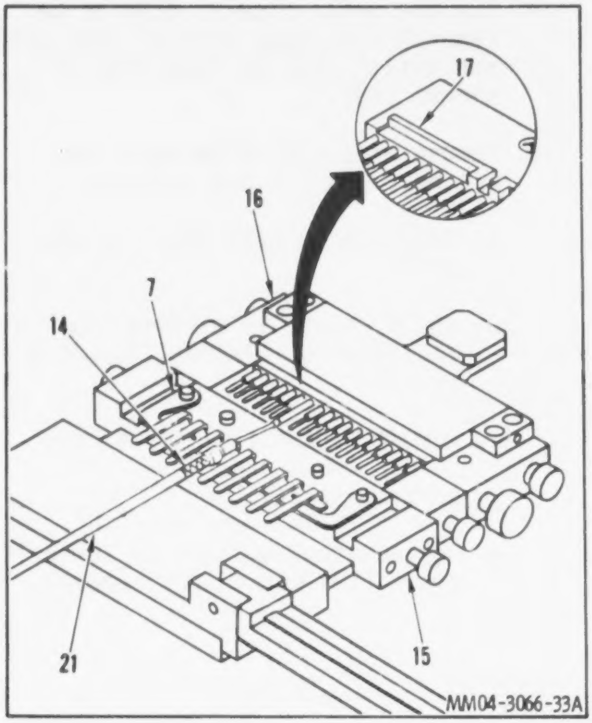
9-8-31. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR (cont) 9-8-31


17
16
7
14
21
15
MM04-3066-33A

10. **Remove cable shield (20) from bus (7).** Use heater tool kit and tweezers.

    a. Heat bus sleeve (14) with heat gun tool. Remove sleeve (14) with tweezers.

    b. While solder (21) is melting, pull cable shield (21) from bus (7).

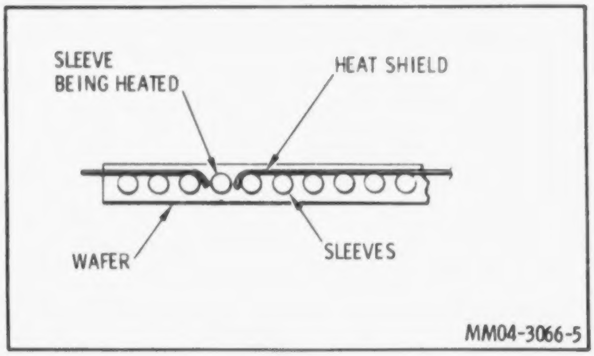
11. **Remove wafer (6) with bus (7) from fixture (16).**

12. **Remove bus bar module (15) from repair fixture (16).**

13. **Turn wafer (6) over and clamp in fixture (16) with wafer keys (17) facing up.**

CAUTION

When heating single wafer sleeve, use heat shields to isolate sleeve and prevent damage to other sleeves. If more than one sleeve or a row of sleeves is being heated, begin heating at one end of sleeves. Direct heat so next sleeve will be preheated.


SLEEVE BEING HEATED
HEAT SHIELD
WAFER
SLEEVES
MM04-3066-5

GO TO NEXT PAGE

9-8-31. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR (cont) 9-8-31

14. Isolate wafer sleeves (13) to be removed with heat shields (22) with one shield (22) on each side of sleeve (13).

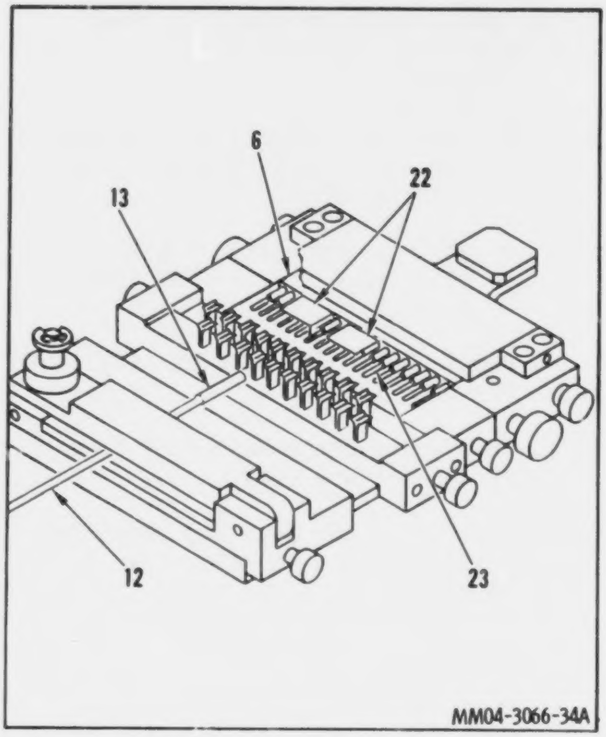
15. Remove wire (12) from wafer (6). Use heat gun kit and tweezers.

    a. Heat sleeve (13) until solder melts.

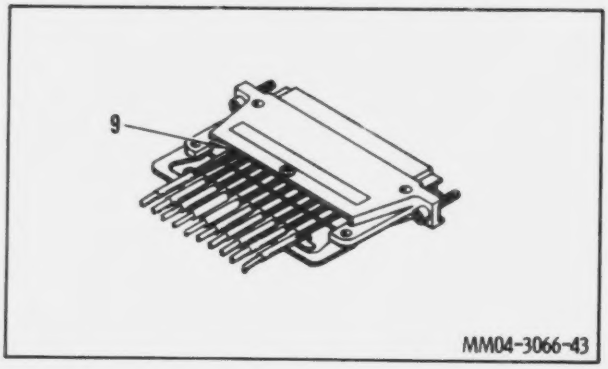
    b. While solder is melting, pull wire (12) free of sleeve (13). Use tweezers.

    c. Remove sleeve (13) and excess solder from wafer terminal (23).

    d. Repeat steps a. thru c. for all wires (12) marked for removal.



16. Repeat steps A.3 through A.15 for wafer (9).



GO TO NEXT PAGE

9-8-31. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR (cont) 9-8-31

B. CLEANING

Wipe connector and wires with a clean rag.

C. INSPECTION

1. Check connectors and for damaged shell.

2. Check wires for residue, excess solder, broken strands, and proper strip sizes (TM 55-1500-323-24).

3. Check wafers for damaged terminals.

D. REPAIR

1. Install bus sleeve (14) over wire (12). Slide sleeve (14) back at least 3 inches to avoid interference with wafer sleeve (12) installation.

NOTE

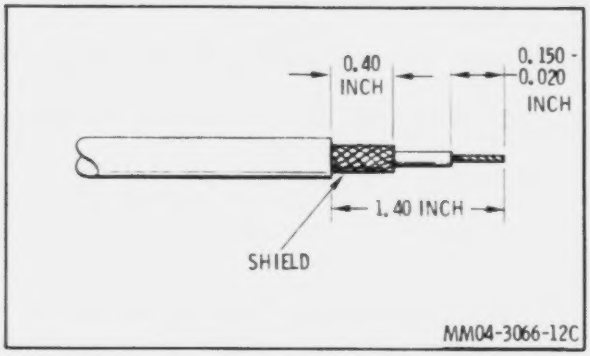
Failure to observe correct orientation of sleeve on wire will result in incorrect sleeve position or improper solder flow.

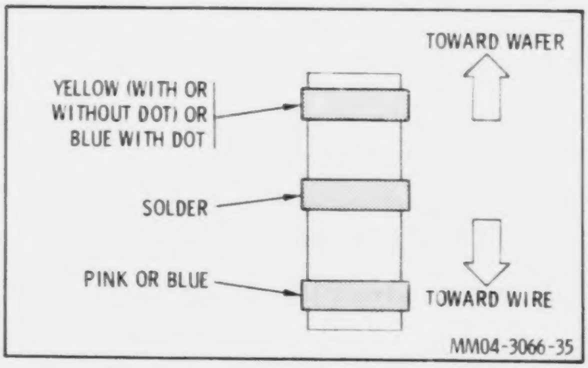
2. Install wafer sleeve (13) on wafer terminal (23). Install wire clip module (24) if not installed.

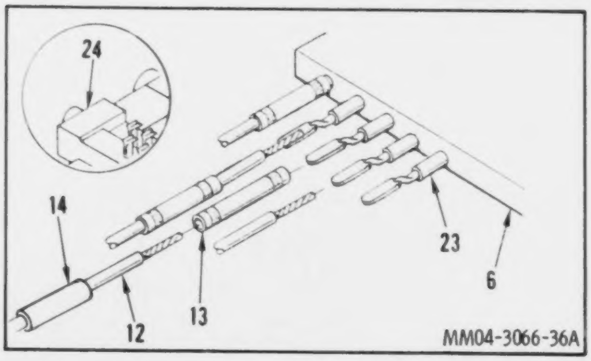
   a. Slide pink or blue end of sleeve (13) over wire (12).

   b. Position stripped end of wire (12) on terminal (23).

   c. Hold wire (12) and slide sleeve (13) over wire (12) with terminal (23) and against wafer (6).


0.40 INCH
0.150 - 0.020 INCH
1.40 INCH
SHIELD
MM04-3066-12C

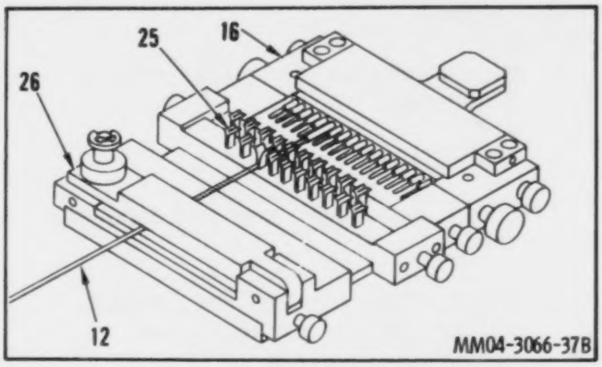

TOWARD WAFER
YELLOW (WITH OR WITHOUT DOT) OR BLUE WITH DOT
SOLDER
PINK OR BLUE
TOWARD WIRE
MM04-3066-35

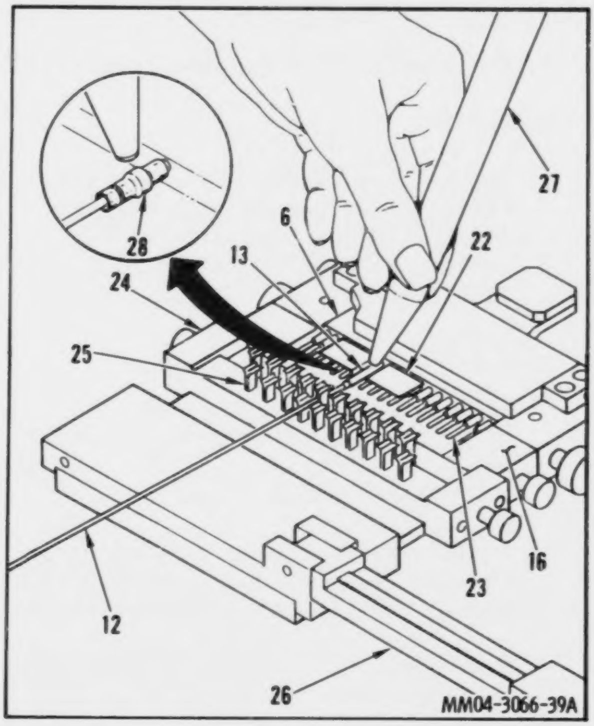

24
14
23
6
12
13
MM04-3066-36A

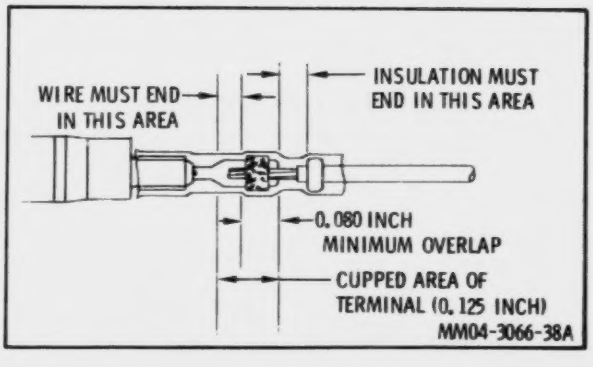
GO TO NEXT PAGE

9-8-31. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR (cont) 9-8-31

3. **Secure wire (12) in fixture (16).**
   - a. Press wire (12) into wire clip (25).
   - b. Close and latch wire clamp (26) to secure wire (12).
4. **Check sleeve (13) and wire (12) for proper position.**
5. **Isolate sleeve (13) to be heated, using movable heat shields (22).**
6. **Heat sleeve (13). Use heat gun (27).**
   - a. Hold heat gun (27) 1/8- to 1/4-inch from sleeve (13).
   - b. Direct hot air at sleeve (13) until solder (28) melts, flows, and wets wire (12).
7. **Check for proper heating of wafer sleeve (13) and proper wire position on wafer terminal (23).**
8. **Remove wafer (6) from fixture (16).**
   - a. Unlatch clamp (26) and remove wire (12) from clip (25).
   - b. Remove wafer (6) with wire (12) from fixture (16).
9. **Remove wire clip module (24).**


25
16
26
12
MM04-3066-37B


27
6
22
28
13
24
25
12
23
16
26
MM04-3066-39A


WIRE MUST END IN THIS AREA
INSULATION MUST END IN THIS AREA
0.080 INCH MINIMUM OVERLAP
CUPPED AREA OF TERMINAL (0.125 INCH)
MM04-3066-38A

GO TO NEXT PAGE

9-8-31. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR (cont) 9-8-31

10. **Install bus bar module (15).**

11. **Install wafer (6) under clamp cover (18) with wafer keys (17) facing down.**

12. **Position bus (7) on alinement pins (19) and slide sleeve (14) over bus terminal (30).**

13. **Check that solder preform (28) lines up with bus terminal (30) and shield braid (31).**

14. **Heat bus sleeve (14).** Use heat gun (27).

    a. Hold heat gun (27) 1/8- to 1/4-inch from sleeve (14).

    b. Direct hot air at sleeve (14).

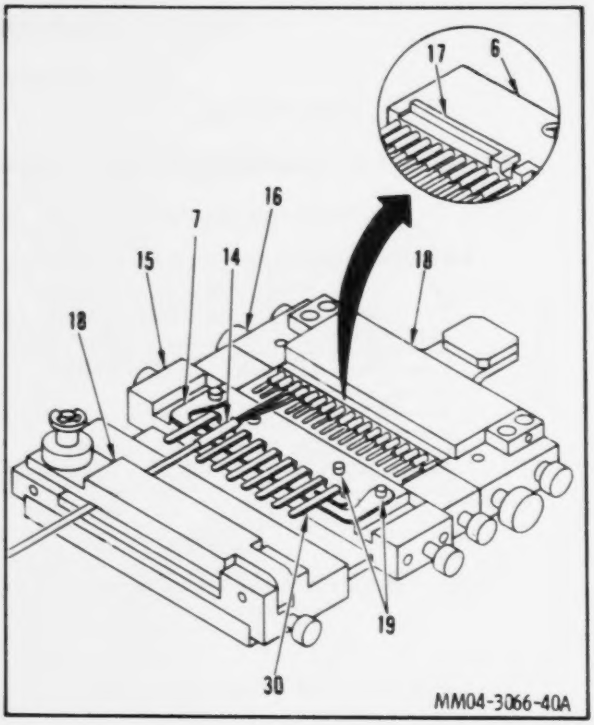
    c. Heat sleeve (14) until solder (28) melts, flows, and wets shield braid (31).

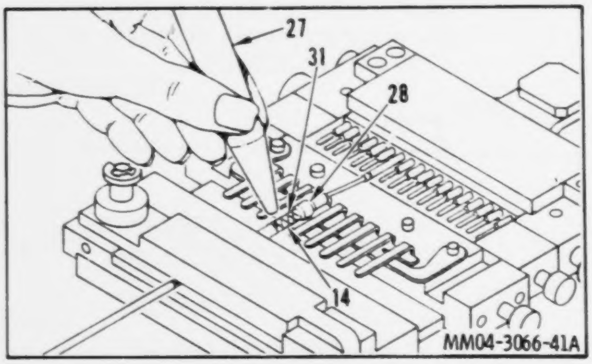
15. **Remove bus (7) and wafer (6) from fixture (16).**

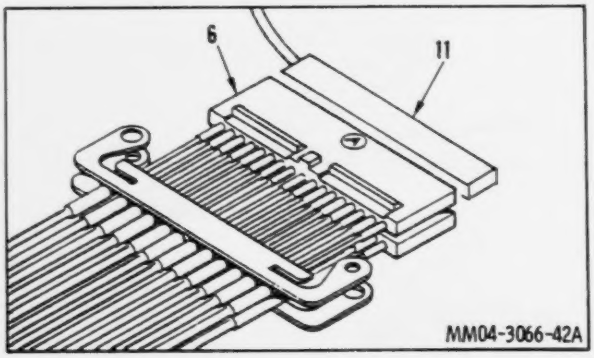
16. Check for proper shield overlap and heating of bus sleeve (14).

17. **Check continuity.** Use multimeter (TM 55-1500-323-24).

18. **Remove static ground bus (11), if installed.**







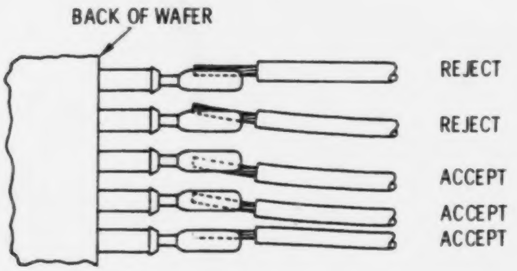
GO TO NEXT PAGE

9-8-31. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR (cont) 9-8-31

PROPER POSITION OF WIRE ON WAFER AND BUSBAR TERMINAL

WIRE POSITION

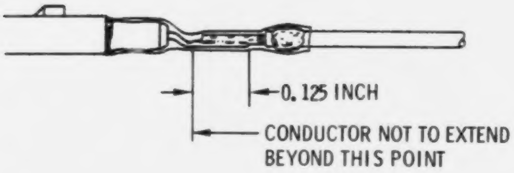
WIRE END MUST BE POSITIONED IN TERMINAL AS SHOWN


BACK OF WAFER
REJECT
REJECT
ACCEPT
ACCEPT
ACCEPT

NOTE: INSULATION SLEEVE NOT SHOWN FOR CLARITY

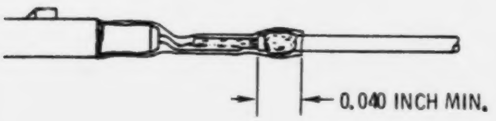
SOLDER TERMINAL OVERLAP (MAXIMUM)

STRIPPED END OF WIRE MUST BE IN CUPPED AREA OF WAFER TERMINAL, AND MUST NOT EXTEND BEYOND CUPPED AREA.


0.125 INCH
CONDUCTOR NOT TO EXTEND BEYOND THIS POINT

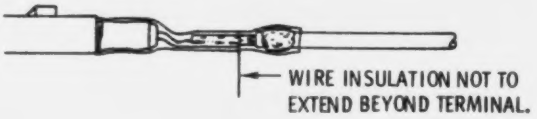
WIRE END SLEEVE OVERLAP

SHRINKABLE SLEEVE MUST OVERLAP WIRE INSULATION AT LEAST 0.040 INCH.


0.040 INCH MIN.

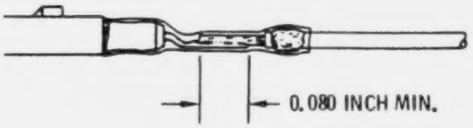
WIRE INSULATION OVERLAP

WIRE INSULATION MUST NOT OVERLAP WAFER TERMINAL


WIRE INSULATION NOT TO EXTEND BEYOND TERMINAL.

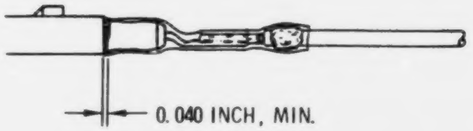
SOLDER TERMINAL OVERLAP (MINIMUM)

STRIPPED END OF WIRE MUST OVERLAP TERMINAL AT LEAST 0.080 INCH.


0.080 INCH MIN.

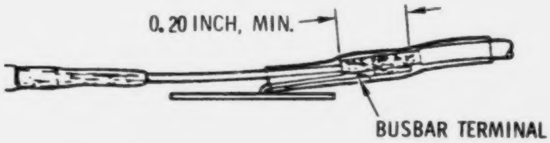
WAFER END SLEEVE OVERLAP

WAFER END OF SHRINKABLE SLEEVE MUST BE WITHIN 0.040 INCH OF WAFER BODY.


0.040 INCH, MIN.

BUSBAR SHIELD OVERLAP

EACH CABLE SHIELD MUST OVERLAP ONE BUSBAR TERMINAL BY AT LEAST 0.20 INCH.


0.20 INCH, MIN.
BUSBAR TERMINAL

MM04-3066-29E

GO TO NEXT PAGE

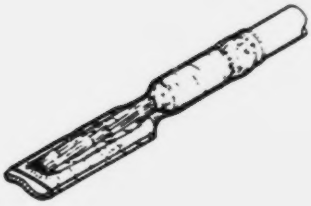
9-8-31. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR (cont)

PROPER HEATING (SOLDERING) OF SLEEVE

ACCEPT IF THE FOLLOWING CONDITIONS EXIST:

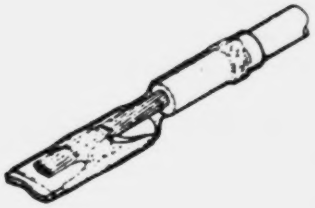
MAXIMUM SOLDER FLOW

A. SOLDER FILLET BETWEEN TERMINAL AND WIRE IS VISIBLE.
B. JOINT AREA IS VISIBLE DESPITE BROWNING OF SLEEVE.



MINIMUM SOLDER FLOW

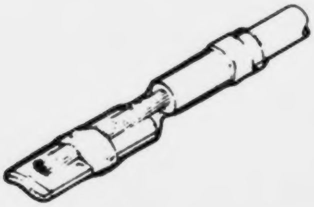
A. SOLDER PREFORM HAS LOST ORIGINAL RING SHAPE.
B. DEFINITE SOLDER FILLET BETWEEN TERMINAL AND WIRE IS VISIBLE AT BOTH ENDS.
C. MELTABLE SEALS HAVE MELTED.
D. SHRINKABLE SLEEVE HAS SQUEEZED TIGHTLY AROUND WIRE AND TERMINAL.



REJECT IF THE FOLLOWING CONDITIONS EXIST:

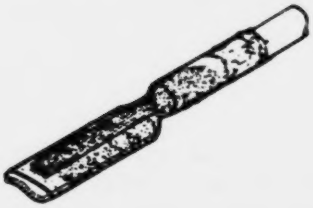
INSUFFICIENT HEAT - MAY BE REHEATED

A. RING SHAPE OF SOLDER PREFORM IS VISIBLE.
B. SLEEVE IS NOT FULLY SHRUNK.
C. SEALS ARE NOT TIGHT AROUND WIRE AND TERMINAL.



OVERHEATED

A. JOINT AREA IS NOT VISIBLE BECAUSE OF SEVERE DARKENING OF SLEEVE.
B. SOLDER FILLET IS NOT VISIBLE BETWEEN TERMINAL AND WIRE.



MM04-3066-30D

GO TO NEXT PAGE

9-8-31. MASS TERMINATION CONNECTOR (MTC) WITH SHIELD BUS (1 OR 2 INCH) REPAIR (cont) 9-8-31

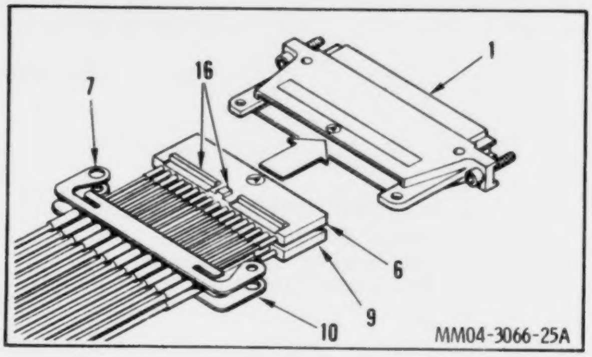
E. **INSTALLATION**

a. Position wafers (6) and (9) together with wafer keys (16) facing out.

b. Insert wafer (6) in "A" side and wafer (9) in "B" side of connector (1).

c. Push wafers (6) and (9) into connector (1) until a click is heard.

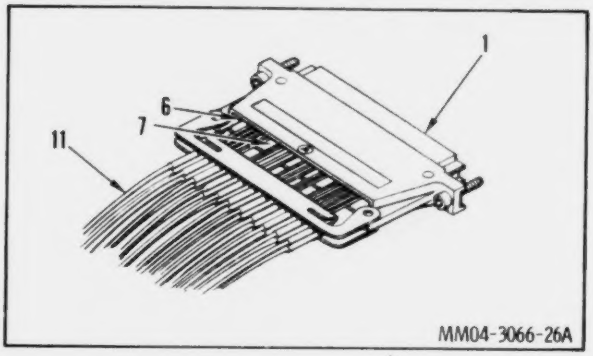
d. Gently pull on wires (11) to ensure wafers (6) and (9) are secured in connector (1).



2. **Install two cable clamps (4) on connector (1).**

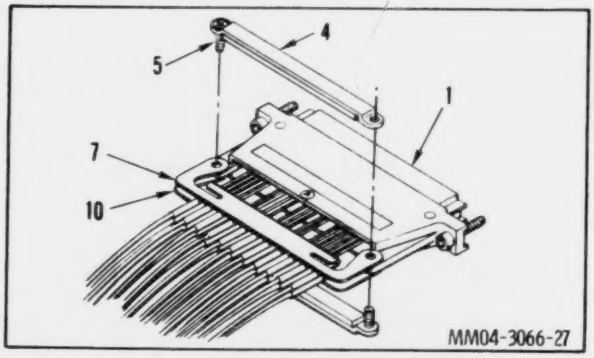
a. Position buses (7) and (10) between connector (1) and cable clamps (4).

b. Tighten two captive screws (5).



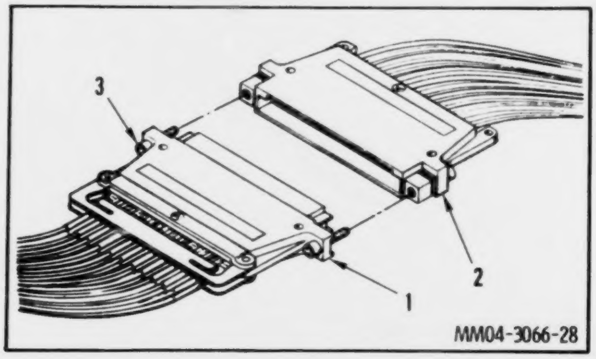
3. **Inspect (TI).**

4. **Attach connector (1) to connector (2).** Tighten two captive jack screws (3).



5. **Perform electrical bond check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

6. **Perform appropriate system operational check.**



END OF TASK

9-8-32. COAXIAL MASS TERMINATION CONNECTOR (MTC) REPAIR 9-8-32

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. REPAIR E. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5120-00-323-4915
Iron, Electric Soldering	3439-00-585-6057
Generator, Gas Engine	6115-00-889-1447
Cable Assy, Electrical Power	6110-00-682-3460
Tool Kit, Heating	4940-01-037-1413
Multimeter, Digital AN/PSM-45	6625-01-139-2512
Aviation Ground Power Unit (AGPU)	1730-01-144-1897
Fixture, Holding	5120-01-135-3072
Ohmmeter, Digital	6625-01-135-3471

Materials/Parts:

	Nitrogen
(E50)	Solder

Personnel Required:

68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

WARNING

- **To prevent electrical shock or damage to sensitive electrical equipment, turn off and disconnect external and battery electrical power. Tag external battery power switch: "Do not apply electrical power".**
- **This task is for repair of mass termination connectors (MTC) either on or off aircraft. Heating tool kit requires 110 volt AC power and supply of regulated air. When working on aircraft, nitrogen must be substituted for air to prevent danger of fire. Use gas generator, power cable, aviation ground power unit, or nitrogen as necessary.**

NOTE

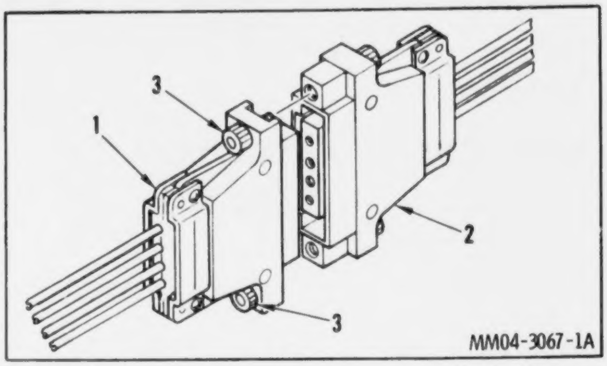
This task is typical for cable or panel connectors with pin or socket connections. Two sizes of contacts are used. Tasks for each size of coaxial cable are identical except for cable strip sizes given for both sizes of cable.

GO TO NEXT PAGE

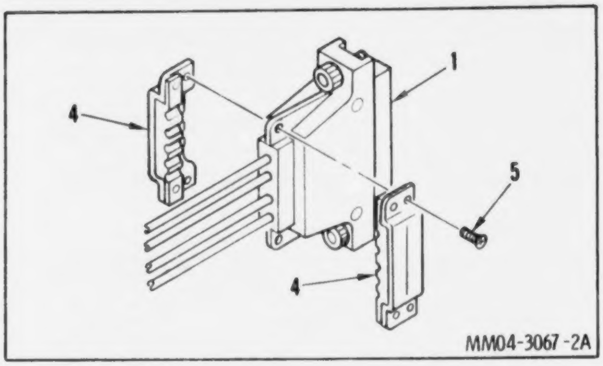
9-8-32. COAXIAL MASS TERMINATION CONNECTOR (MTC) REPAIR (cont) 9-8-32

A. REMOVAL

1. **Detach connector (1) from connector (2).** Loosen two captive jack screws (3).


3
1
2
3
MM04-3067-1A

2. **Remove two cable clamps (4) from connector (1).**
   a. Remove two screws (5).
   b. Remove clamps (4) from connector (1).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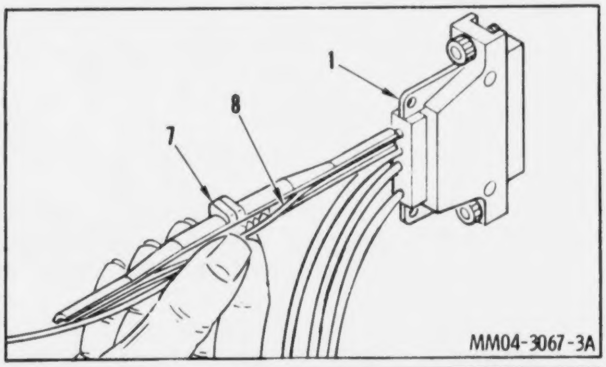
MM04-3067-2A

3. **Remove coaxial contact (6) from connector (1).**
   a. Use removal end of tool (7) and slide cable (8) into slot.
   b. Slide tool (7) into rear of connector (1) until tool (7) seats on contact (6).
   c. Pull tool (7) and contact (6) free of connector (1).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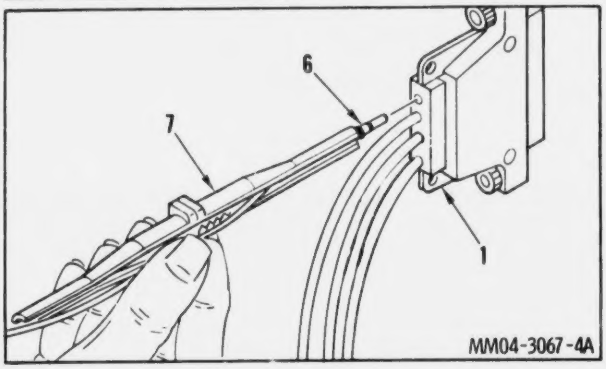

6
7
1
MM04-3067-4A

GO TO NEXT PAGE

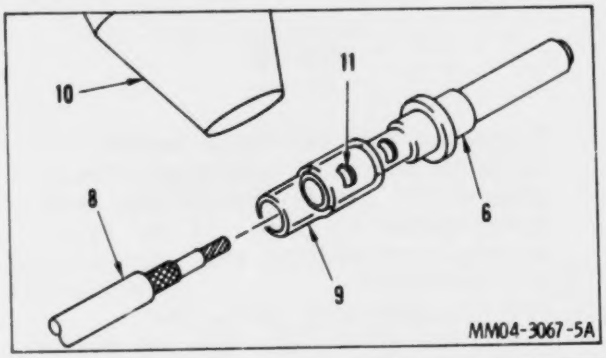
9-8-32. COAXIAL MASS TERMINATION CONNECTOR (MTC) REPAIR (cont) 9-8-32

B. CLEANING

Wipe contacts and connector with a clean rag.

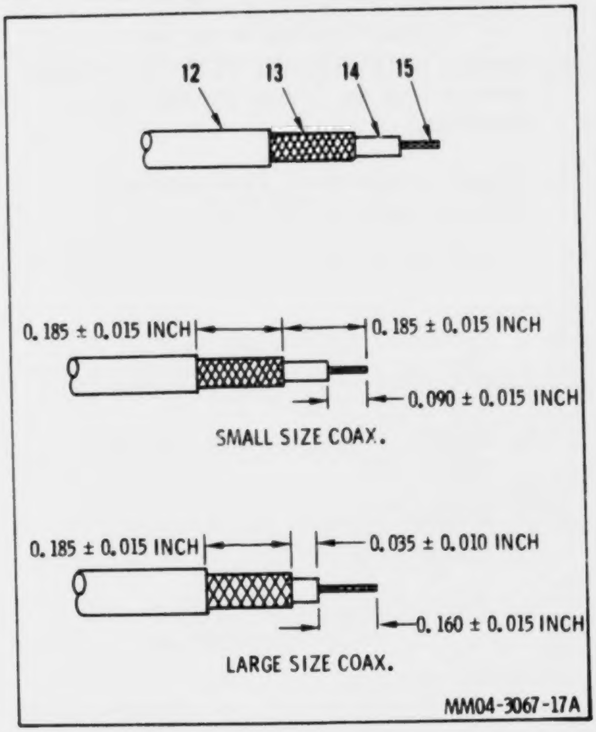
C. INSPECTION

1. Check for damaged contacts. If contacts are damaged, see D. REPAIR.
2. Check for damaged connector. Replace damaged connector.


10
11
8
6
9
MM04-3067-5A

D. REPAIR

1. Remove contact (6) from cable (8).
   a. Use a sharp knife to score sleeve (9) lengthwise on opposite sides of contact (6). Do not cut cable (8).
   b. Hold contact (6) with pliers. Heat contact (6) with heat gun (10) until solder (11) melts. Quickly pull contact (6) off cable (8).
2. If end of cable (8) is unserviceable, or if installing new cable, strip cable (8) to size illustrated.
   a. Strip outer jacket (12).
   b. Strip shield braid (13) from front of cable (8).
   c. Strip primary insulator (14).
   d. Ensure conductor (15) is straight and twisted into original shape.


12
13
14
15
0.185 ± 0.015 INCH
0.185 ± 0.015 INCH
0.090 ± 0.015 INCH
SMALL SIZE COAX.
0.185 ± 0.015 INCH
0.035 ± 0.010 INCH
0.160 ± 0.015 INCH
LARGE SIZE COAX.
MM04-3067-17A

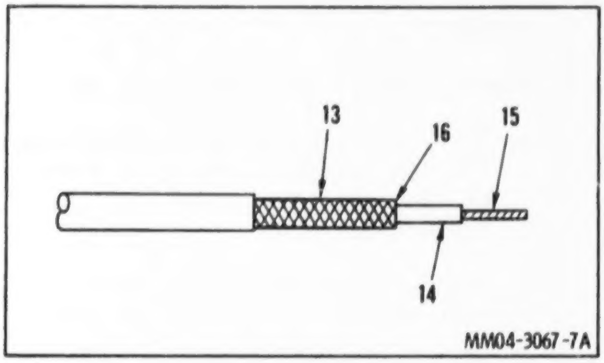
GO TO NEXT PAGE

9-8-32. COAXIAL MASS TERMINATION CONNECTOR (MTC) REPAIR (cont) 9-8-32

WARNING

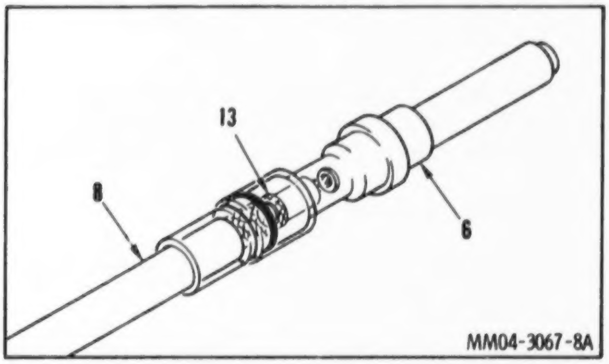
Soldering iron can cause severe burns to personnel and start fires. Observe all safety precautions when using soldering iron. If injury occurs, seek medical aid.

3. **Pre-tin conductor (15).** Use electrical soldering iron and solder (E50) (TM 55-1500-323-24).
4. **Ensure shield braid (13) is trimmed evenly and no loose strands are exposed.**
5. **Smooth braid ends (16) against primary insulation (14).**



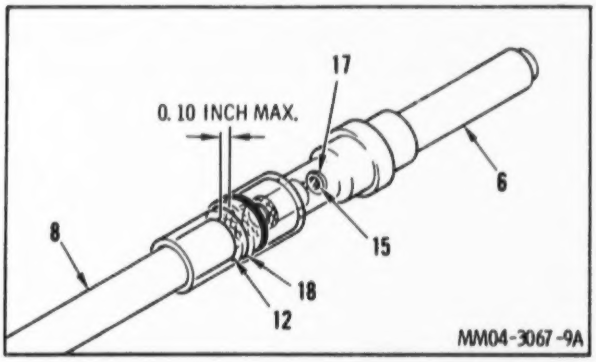
MM04-3067-7A

6. **Insert cable (8) into contact (6).**
   a. Gently slide contact (6) on cable (8).
   b. Rotate contact (6) slightly to prevent braid (13) from catching.



MM04-3067-8A

7. **Check cable (8) and contact (6) for proper insertion.**
   a. Center conductor (15) must be visible through forward inspection window (17).
   b. Distance from rear of contact body (18) to outer jacket (12) must not exceed 0.10-inch.



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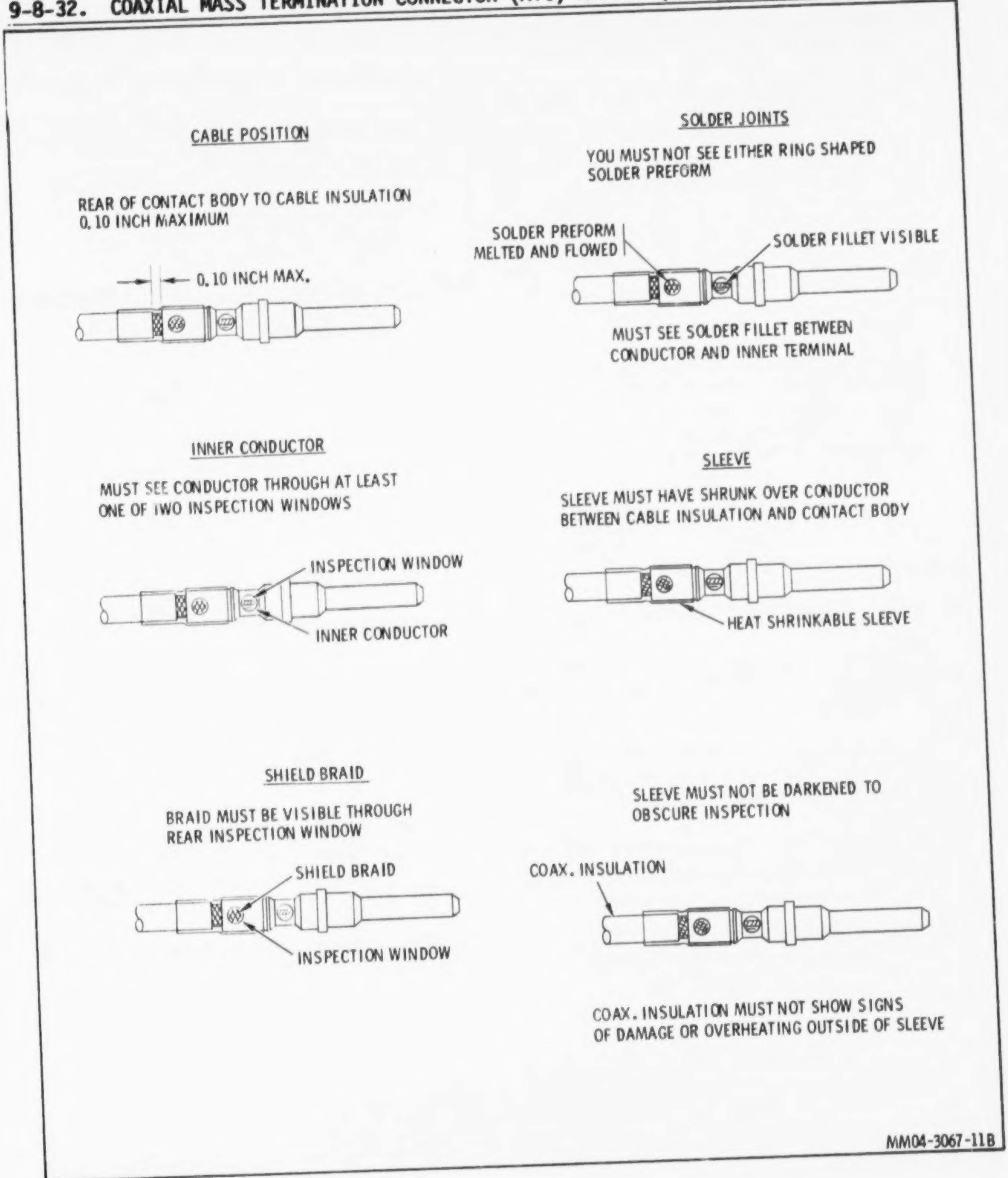
9-8-32. COAXIAL MASS TERMINATION CONNECTOR (MTC) REPAIR (cont)



CABLE POSITION

REAR OF CONTACT BODY TO CABLE INSULATION 0.10 INCH MAXIMUM

SOLDER JOINTS

YOU MUST NOT SEE EITHER RING SHAPED SOLDER PREFORM

MUST SEE SOLDER FILLET BETWEEN CONDUCTOR AND INNER TERMINAL

INNER CONDUCTOR

MUST SEE CONDUCTOR THROUGH AT LEAST ONE OF TWO INSPECTION WINDOWS

SLEEVE

SLEEVE MUST HAVE SHRUNK OVER CONDUCTOR BETWEEN CABLE INSULATION AND CONTACT BODY

SHIELD BRAID

BRAID MUST BE VISIBLE THROUGH REAR INSPECTION WINDOW

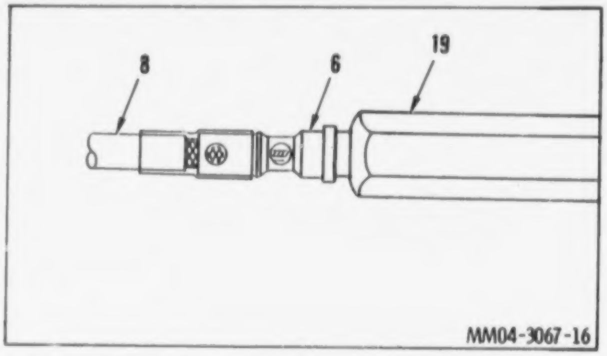
SLEEVE MUST NOT BE DARKENED TO OBSCURE INSPECTION

COAX. INSULATION MUST NOT SHOW SIGNS OF DAMAGE OR OVERHEATING OUTSIDE OF SLEEVE

0.10 INCH MAX.
SOLDER PREFORM MELTED AND FLOWED
SOLDER FILLET VISIBLE
INSPECTION WINDOW
INNER CONDUCTOR
HEAT SHRINKABLE SLEEVE
SHIELD BRAID
INSPECTION WINDOW
COAX. INSULATION
MM04-3067-11B

GO TO NEXT PAGE

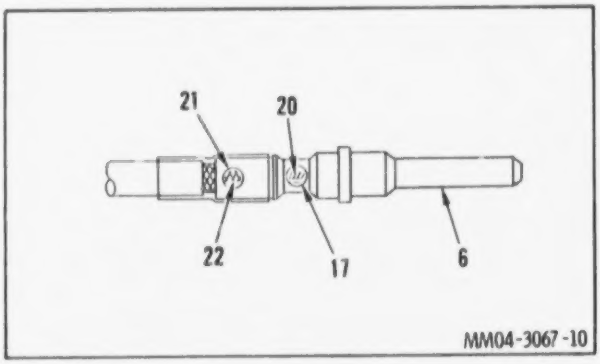
8. **Insert contact (6) with cable (8) into repair holding fixture (19).**
   - a. Cable (8) must be fully inserted into contact (6).
   - b. Contact (6) must be fully inserted in fixture (19).
   - c. Secure cable (8) and fixture (19) to prevent movement during heating.



CAUTION

Secure cable during heating to prevent "cold" solder joints. Be sure to allow solder to solidify at least 15 seconds before removing contact from holding fixture.

9. **Heat contact (6).** Use heat gun.
   - a. Direct heat at forward inspection window (17) until solder preform (20) melts and flows.
   - b. Direct heat at rear inspection window (21) until solder (22) melts and flows.
10. **After cooling, check contact (6) for proper position and good solder joints.**
11. **Perform continuity check.** Use multimeter (TM 55-1500-323-24).



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9-8-32. COAXIAL MASS TERMINATION CONNECTOR (MTC) REPAIR (cont) 9-8-32

E. INSTALLATION

1. **Insert contact (6) in connector (1).**

   a. Slide cable (8) into insertion end of tool (7).

   b. Pull cable (8) until rear of contact (6) is flush with tool (7).

   c. Push contact (6) and tool (7) into rear of connector (1) until contact (6) clicks in place.

   d. Remove tool (7) from connector (1).

   e. Pull gently on cable (8) to ensure contact (6) is fully seated.

2. **Install two cable clamps (4) on connector (1).**

   a. Position cable clamps (4) on connector (1).

   b. Install two screws (5).

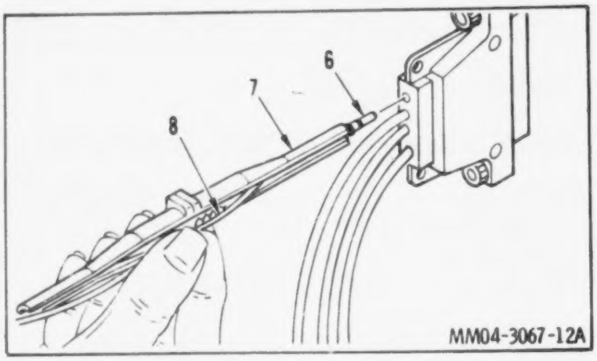
3. **Inspect (TI).**

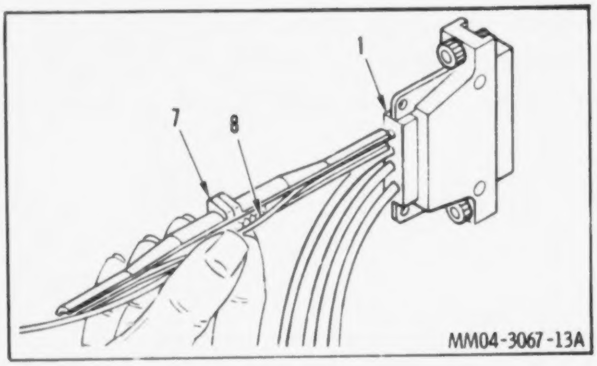
4. **Attach connector (1) to connector (2).** Tighten two captive screws (3).

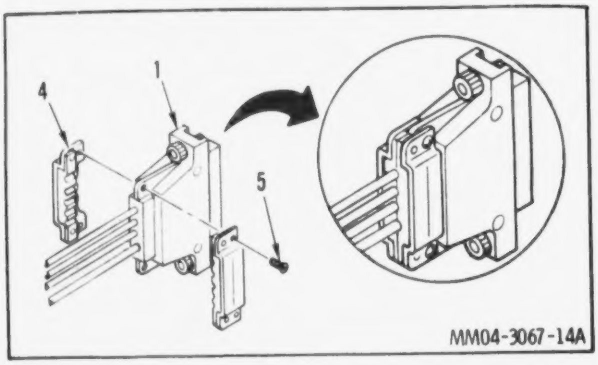
5. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

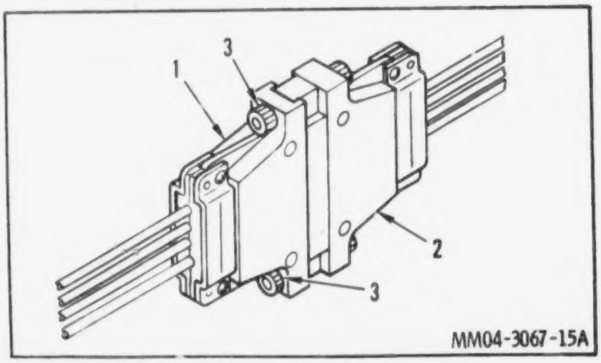
6. **Perform appropriate system operational check**

END OF TASK









9-8-33. AFT AVIONICS BAY DISTRIBUTION BOX REMOVAL/INSTALLATION 9-8-33

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

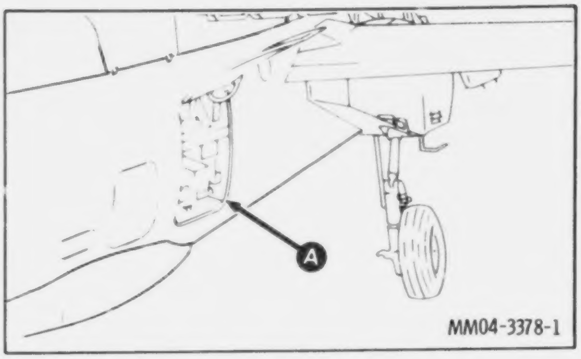
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 11-1520-238-23-2
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access door R295 opened



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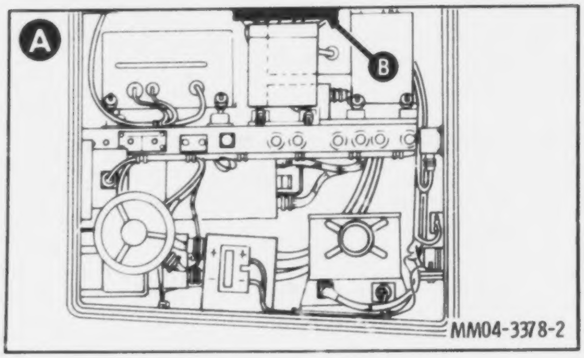

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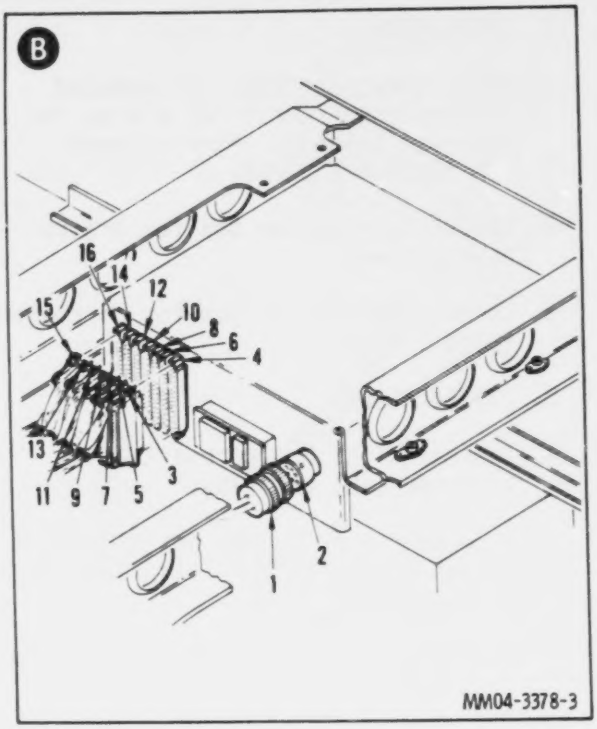
9-8-33. AFT AVIONICS BAY DISTRIBUTION BOX REMOVAL/INSTALLATION (cont) 9-8-33

A. REMOVAL

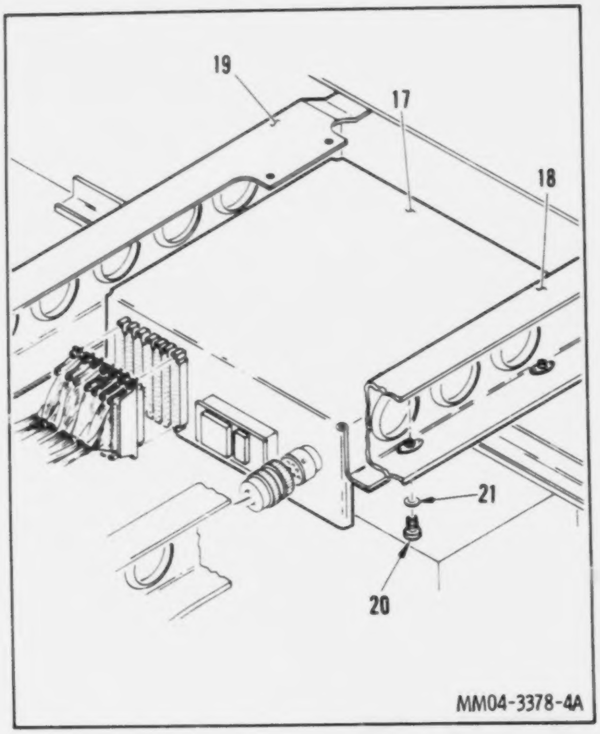
1. Detach the following connectors:
   - a. P485 (1) from A323J7 (2).
   - b. P496 (3) from A323J8 (4).
   - c. P491 (5) from A323J6 (6).
   - d. P499 (7) from A323J5 (8).
   - e. P493 (9) from A323J4 (10).
   - f. P497 (11) from A323J3 (12).
   - g. P494 (13) from A323J2 (14).
   - h. P498 (15) from A323J1 (16).


B
16
14
12
10
8
6
4
15
13
11
9
7
5
3
2
1
MM04-3378-3

2. Remove distribution box (17) from airframe (18) and (19).
   - a. Remove four screws (20) and four washers (21).
   - b. Remove distribution box (17) from airframe (18) and (19).

B. CLEANING

Wipe all removed and attaching parts with a clean rag.


19
17
18
21
20
MM04-3378-4A

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9-8-33. AFT AVIONICS BAY DISTRIBUTION BOX REMOVAL/INSTALLATION (cont) 9-8-33

C. INSPECTION

1. **Check wires for cuts and damaged connections.** Check nut plates for stripped threads. None allowed (TM 55-1500-323-24).

2. **Check distribution box for cracks.** None allowed.

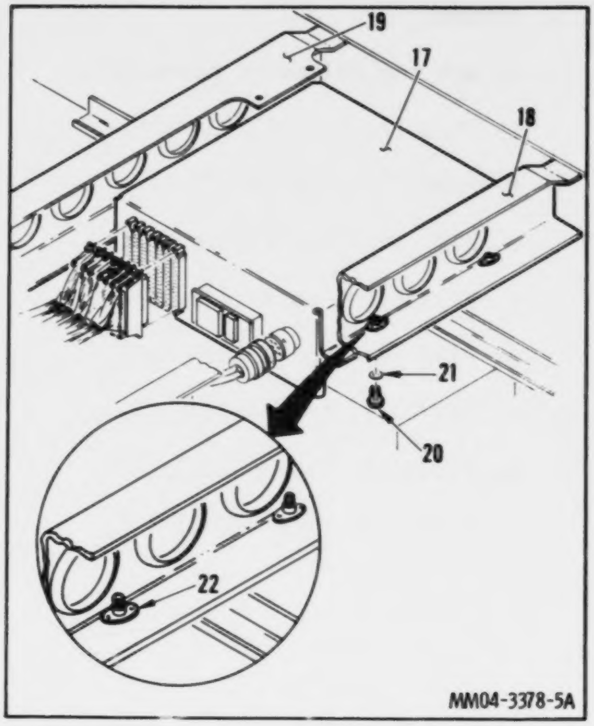
3. **Check distribution box for corrosion** (para 1-5-38).

D. INSTALLATION

1. **Install distribution box (17) on airframe (18) and (19).**

   a. Aline distribution box (17) with nut plates (22) on airframe (18) and (19).

   b. Install four washers (21) and four screws (20).



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9-8-33. AFT AVIONICS BAY DISTRIBUTION BOX REMOVAL/INSTALLATION (cont) 9-8-33

2. **Attach the following connectors:**

   a. P498 (15) to A323J1 (16).

   b. P494 (13) to A323J2 (14).

   c. P497 (11) to A323J3 (12).

   d. P493 (9) to A323J4 (10).

   e. P499 (7) to A323J5 (8).

   f. P491 (5) to A323J6 (6).

   g. P485 (1) to A323J7 (2).

   h. P496 (3) to A323J8 (4).

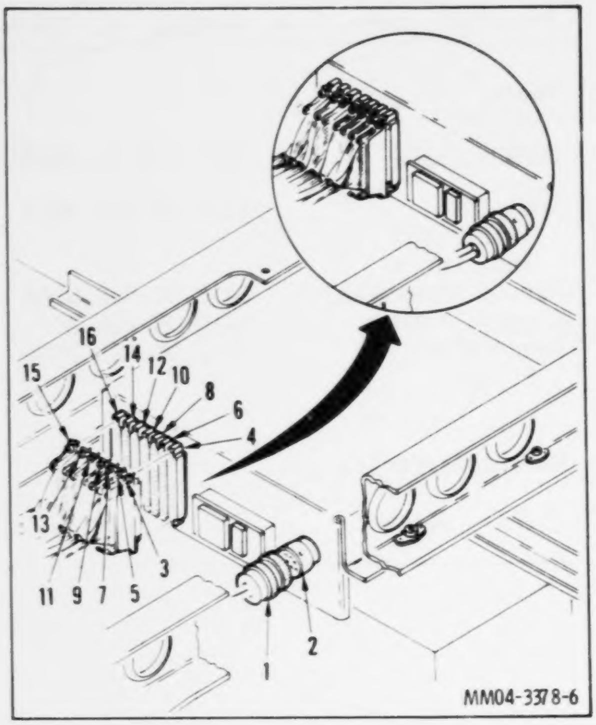
3. **Inspect (TI).**

4. **Perform electrical bonding check** (TM 55-1500-323-24). Resistance not to exceed 0.0025 ohms. Use ohmmeter.

5. **Perform DASE and stabilator operational checks** (TM 55-1520-238-T).

6. **Perform doppler navigation system (DMS) and HARS operational checks** (TM 11-1520-238-23-2).

7. **Secure access door R295** (para 2-2-2).



MM04-3378-6

END OF TASK

9-8-34. START MODE RELAY PANEL REMOVAL/INSTALLATION 9-8-34

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Apron, Impermeable	8415-00-082-6108
Gloves, Rubber	8415-00-266-8677
Respirator, Air Filter	4240-00-022-2524

Materials/Parts:

(E123) Solvent

Personnel Required:

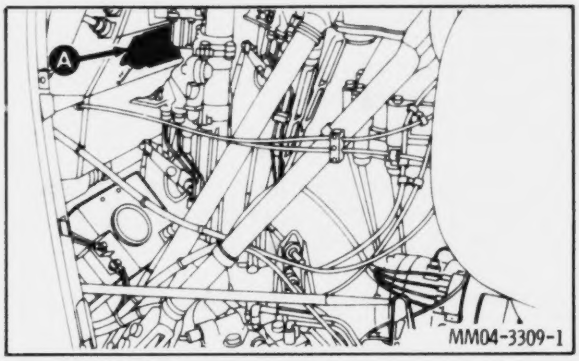
68F10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T
TM 55-1500-323-24

Equipment Conditions:

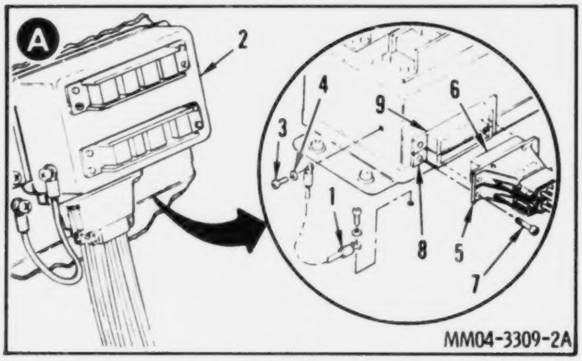
Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panel L200 removed



MM04-3309-1

A. REMOVAL

1. **Disconnect ground wire (1) from start mode relay panel (2).** Remove screw (3) and washer (4).
2. **Detach connectors P978 (5) and P977 (6) from relay panel (2).**
   a. Loosen four captive jackscrews (7) from connectors (5) and (6).
   b. Detach connector P978 (5) from connector A330J2 (8) and connector P977 (6) from connector A330J1 (9).



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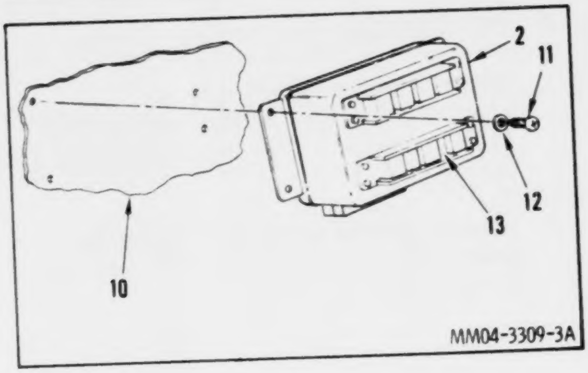
9-8-34. START MODE RELAY PANEL REMOVAL/INSTALLATION (cont)



3. **Remove relay panel (2) from power distribution box (10).** Remove four screws (11) and washers (12).

B. CLEANING

WARNING

Solvent is flammable and toxic. Use in a well ventilated area away from open flames. Breathing of vapors could cause dizziness. If solvent comes in contact with eyes or skin, flush with water. If injury occurs, seek medical aid.

1. **Clean start mode relay panel exterior and mounting area.** Use solvent (E123) and clean rag. Wear respirator, rubber gloves, and apron.
2. **Clean interior of start mode relay panel and wiring.** Spray solvent into panel through unused relay position 4 (13). Use solvent (E123). Wear respirator, rubber gloves, and impermeable apron.

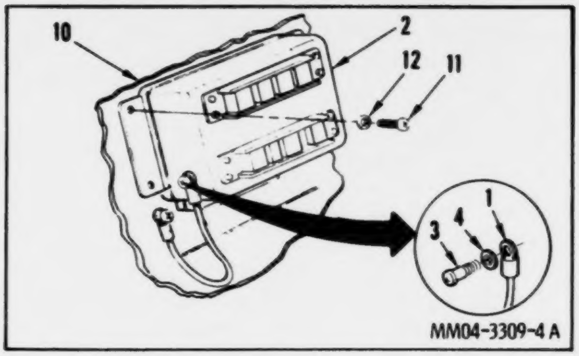
C. INSPECTION

1. **Check wires for wear, cuts, breaks, and damaged terminal lugs** (TM 55-1500-323-24).
2. **Check connector for bent pins or damaged threads** (TM 55-1500-323-24).
3. **Check mounting area for loose, damaged, or missing nut plates.** None allowed.
4. **Check attaching hardware for stripped or damaged threads.** Damage not to exceed 50 percent of one thread.

GO TO NEXT PAGE

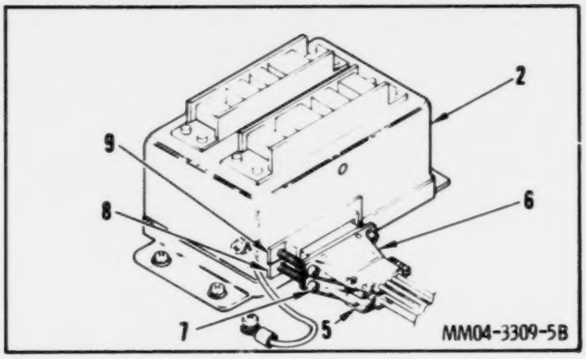
9-8-34. START MODE RELAY PANEL REMOVAL/INSTALLATION (cont) 9-8-34

D. INSTALLATION



1. **Install relay panel (2) on electrical power distribution box (10).** Install four washers (12) and screws (11).

2. **Attach ground wire (1) to relay panel (2).** Install washer (4) and screw (3).



3. **Attach connectors P977 (6) and P978 (5) to relay panel (2).**

   a. Attach connector P977 (6) to connector A330J1 (9) and connector P978 (5) to connector A330J2 (8).

   b. Tighten four captive jack-screws (7).

4. **Inspect (TI).**

5. **Secure access panel L200** (para 2-2-2).

6. **Perform power plant operational check engine 1 or engine 2** (TM 55-1520-238-T).

END OF TASK

9-8-35. ELECTRONIC MODULE REPLACEMENT 9-8-35

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Removal Tool, Relay (2)	5120-01-097-5219

Personnel Required:

68F10 Aircraft Electrician

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

NOTE

This task is typical for electronic modules, electromagnet relays, microcircuits, electrical contacts, and terminal junction boxes in:

- Aft avionics bay distribution box
- Electrical power distribution box
- Engine anti-ice relay panel
- Pilot matrix module
- Stabilator relay panel
- Start mode relay panel

GO TO NEXT PAGE

A. REMOVAL

NOTE

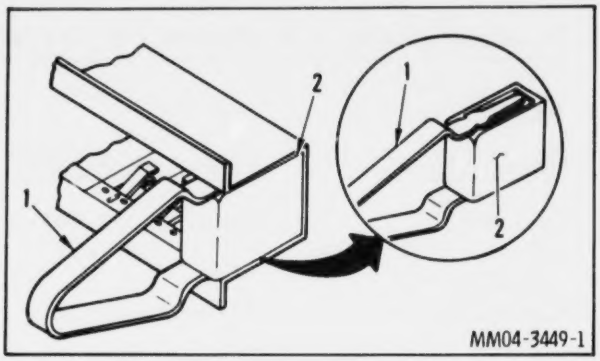
The following three steps are typical for removal of all single space relays. Use one relay removal tool.

1. **Gain access to area of relay removal.**
2. **Identify relay to be removed.**
3. **Remove relay.**
   - a. Insert relay removal tool (1) over relay (2).
   - b. Press firmly on tool (1). Pull tool (1) and relay (2) clear of relay mount (3).

NOTE

The following three steps are typical for removal of all double space relays. Use two relay removal tools.

4. **Gain access to area of relay removal.**
5. **Identify relay to be removed.**
6. **Remove relay.**
   - a. Insert both relay removal tools (1) and (4) over relay (5).
   - b. Press firmly on both tools (1) and (4). Pull tools (1) and (4) and relay (5) clear of relay mount (3).



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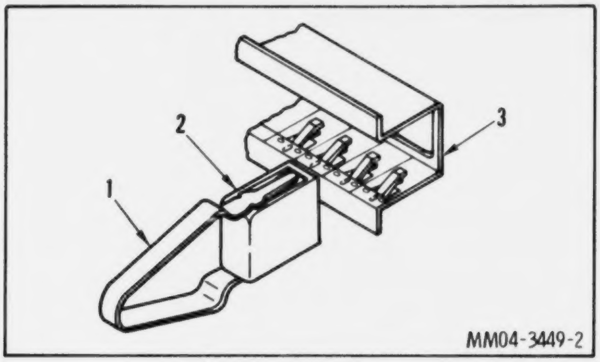

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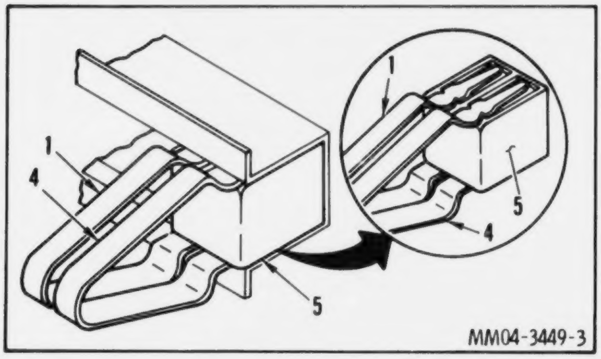

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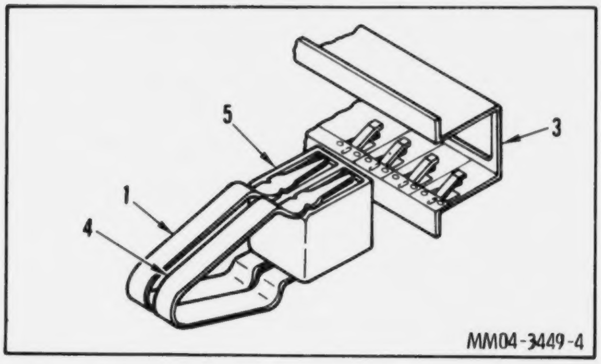


MM04-3449-4

B. CLEANING

Wipe relay mount with a clean rag.

GO TO NEXT PAGE

9-8-35. ELECTRONIC MODULE REPLACEMENT (cont) 9-8-35

C. **INSPECTION**

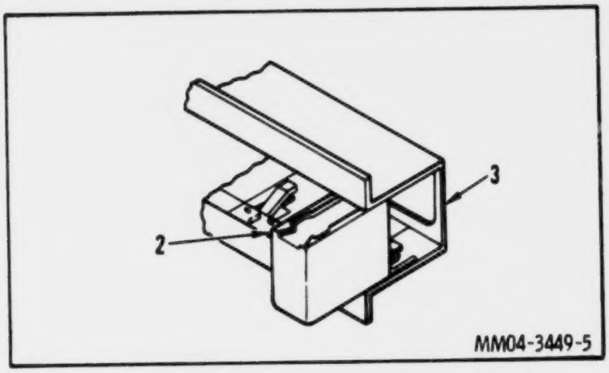
Check relay mount for cracks, nicks or damaged connections. None allowed.

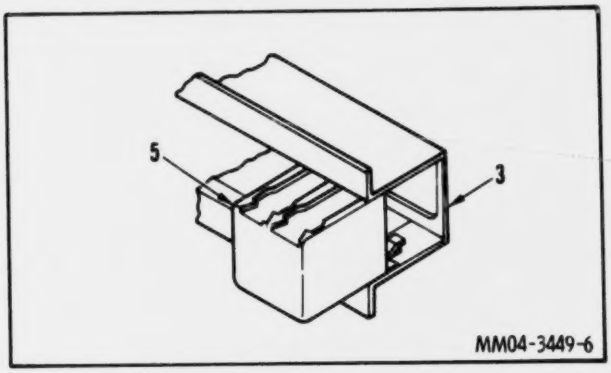
D. **INSTALLATION**

NOTE

The following steps are typical for all single and double space relays.

1. **Install relay.**
   - a. Insert relay (2) or (5) into relay mount (3).
   - b. Push firmly on relay (2) or (5) until it seats.
2. **Perform operational check for relay** being replaced (TM 55-1520-238-T).





END OF TASK

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

R. L. DILWORTH
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12-31, AVUM and AVIM Maintenance requirements for AH-64A Helicopter, Attack (APACHE)

☆U.S. GOVERNMENT PRINTING OFFICE: 1989 242-451/01614

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PFC JOHN DOE
COA, 3d ENGINEER BN
FT. LEONARDWOOD, MO 63108

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 55-1520-238-23-5	7 June 1988	AVUM and AVIM Manual for Army AH-64A Helicopter

BE EXACT PIN-POINT WHERE IT IS				IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	
6	2-1a			In line 6 of paragraph 2-1a the manual states the engine has 6 Cylinders. The engine on my set only has 4 Cylinders. Change the manual to show 4 Cylinders.
81		4-3		Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim - Please correct one or the Other.
125	line	20		I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got What I ordered, so the NSN is Wrong. Please give me a good NSN

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
JOHN DOE, PFC (268) 317-7111

SIGN HERE John Doe
JOHN DOE

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 057306-000